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ABSTRACT

A study examined the cognitive development of at-risk students (those who have experienced difficulty or failure in their careers as learners), focusing on such groups as potential drop-outs, minority children, and disabled students (dsylexic or non-English speaking), as well as teaching thinking to this same student population. Although research results on programmatic effects for at-risk students are somewhat controversial and frequently mixed, some guidelines for successful instruction are formulated, emphasizing interactive discussion during instruction. Teaching thinking involves not only learning cognitive skills such as analysis, classification, and evaluation, but also becoming conscious of the strategies that are appropriate to a particular task. The movement to teach thinking also focuses on the role of the teacher as a mediator of learning. Finally, the development of instructional materials and programs to teach thinking is being encouraged. Implications for the future include the need for teachers concerned with cognitive development, the need for long-term change as opposed to quick fix activities, the need for a better integrated curriculum, and the need to examine current policies and practices. (A total of 184 references are appended.) (MM)

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TEACHING THINKING AND AT-RISK STUDENTS: UNDERSTANDING THE PROBLEM

Barbara Z. Presseisen

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We live in an age when to be young and to be indifferent can no longer be synonymous. We must prepare for the coming hour. The claims of the Future are represented by suffering millions; and the Youth of a Nation are the trustees of Posterity.

Benjamin Disraeli (1926, first published 1845)
in Sybil, p. 431.

You see, really and truly, apart from the things anyone can pick up (the dressing and the proper way of speaking, and so on), the difference between a lady and a flower girl is not how she behaves, but how she's treated.

Bernard Shaw (1951, first published 1900)
in Pygmalion, p. 99.

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TEACHING THINKING AND AT-RISK STUDENTS: UNDERSTANDING THE PROBLEM

IN THE SHADOW OF SYBIL AND PYGMALION

Once there were two men who wrote lovingly but critically about their resident country, England. One man was destined to become that nation's prime minister and worried about the great gap that existed between the rich and the poor in a newly industrialized society. He called his book Sybil; it was a study of have's and have-not's. The second author was a playwright and social critic. In the drama he crafted for the most sophisticated theatre since the ancient Greeks, he studied the language and interaction between the rich and the poor, between the "two nations" of the prime minister's novel. His play, Pygmalion, recalled the legendary sculptor who carved an exquisite ivory statue and, with the aid of a Greek goddess, breathed life into his beautiful creation.

Teaching thinking and at-risk students in the United States today may seem to provoke issues far removed from the problems of England over a century ago. Yet, the dilemmas presented in Sybil and Pygmalion may not be so different from the educational problems of a society on the threshold of post-industrial economy. The gap between the rich and the poor, not only in material terms but intellectually, may be greater now than Disraeli feared in Victoria's England. Similarly, in an era of school reform and change, the expectations set for students who must prepare for life in a competitive and interdependent world may require an education no less miraculous than the transformation Shaw saw possible in the relationship between Henry Higgins and Eliza Doolittle.

At the heart of these comparative situations is the power of thinking. Two men of English letters saw the relevance of good thinking to one's behavior as well as to one's place in society. In America today, learning to think critically by completing a formal education may be a prerequisite for both success and survival in life. The major question to be resolved is how to provide a quality education for all the citizens of society, including those most at-risk of failure, whose talents must be challenged and realized in the few short years of childhood and adolescence.

The Nature of This Study

In recent literature on improved schooling, there are numerous references to the notion that teaching thinking -- with an emphasis on higher order cognitive skill development -- ought to be an educational goal for all America's school-aged students (Costa, 1985; Cuban, 1987; Sleeter & Grant, 1986). For reasons rooted in international economic competition, global technological development, and changing demographic circumstances, it is suggested that every youngster needs to develop his/her abilities to solve problems, to examine issues and ideas critically, and to invent or creatively design new materials and solutions. It seems what was once the province of the gifted and talented, or at least the academic select, has become a necessity for an entire school generation facing the 21st century (Children's Defense Fund, 1987; Comer, 1987; Task Force on Education for Economic Growth, 1983).

There is great discrepancy between this new goal for schooling and current practice in America's classrooms. Many recent reports calling for educational reform suggest that the gap between rhetoric and reality is enormous (Sizer, 1984; Toch, 1984). Few deny what ought to be the realized

dream of schooling in a democratic republic; but lessons of history suggest that we have been here before and not always with great success. What does it mean to teach intellectual development to school populations whose dropout rate exceeds 30 or 40 percent, or even 60 or 70 (Levin, 1987; Wehlage, Rutter, & Turnbaugh, 1987; Rumberger, 1987)? How do American educators approach groups treated as outcasts for over a century (Ogbu, 1986; Scott-Jones & Clark, 1986) or students who cannot speak the majority population's language (Durán, 1985; Cummins, 1986), let alone share many of its values or experiences? Such examination and discussion is the focus of this study. The theoretical and practical bases of teaching thinking, including higher order cognitive processes, to so-called "at-risk" students are explored and clarified, so that more specific activity can be generated to translate the new goal into educational reality in the near future. An examination of what has already been attempted in interventions with similar students will also be considered.

This study is seen as an effort to begin to understand the difficulties and to clarify the problems introduced by a new thrust in American education. If posing the problem is an important first step to resolving a long-standing educational dilemma, as many suggest (Brown & Walter, 1983; Fredericksen, 1984), then the task at hand is a significant one. Educational problems are often not well-structured; a clearer vision may make such a complex issue as the cognitive development of at-risk students more surmountable and provide some avenues of pursuit for interested parties. It is proposed there is no more critical issue to address in current American education.

Specific Questions to Pursue

The literature on low-achieving students in American schools forms a massive collection. Similarly, the documents on cognitive instruction and

the teaching of thinking comprise a very large compendium of information on more than half a century of theory, research, and practice in schooling. In an effort to focus attention on the most significant material for this examination, several questions have been formulated to help guide the research conducted in completing this study.

- Who are at-risk students in America's schools? Is this a new problem for our country or are there recent significant developments?
- What do we need to know about at-risk students' cognitive, as well as their social and emotional, development and how that influences their achievement in school?
- How does research on teaching thinking and problem solving inform our understanding of at-risk learners?
- What issues are raised by seeking to teach thinking to at-risk populations?
- What implications for instructional and curricular policy and practice seem warranted in the thinking skill development of at-risk youth?

The discussion that follows begins to answer these questions. The contributions of many other educators may be expected to elaborate on the ideas explored in this particular study.

DEFINING AND DESCRIBING A POPULATION

Before we can begin to consider the problem of teaching thinking to at-risk students, an examination of who these youngsters are and what is known about their development and learning is in order. Similarly, some understanding about interventions to educate them in the past, as well as currently, sets the stage for any new endeavor or innovative treatment.

"At-Risk" - Origins of the Metaphor

"At-risk" appears to be the latest semantic label of American education attached to several groups of students who have experienced difficulty or, in fact, failure in their careers as learners. Historically, other category names have been associated with these same populations: culturally deprived, low income, dropout, alienated, marginal, disenfranchised, impoverished, underpriviledged, disadvantaged, learning disabled, low performing, low achieving, remedial, urban, ghetto, language-impaired, etc. Obviously, many concerns are mirrored in each group label and chances are there would be great difficulty in characterizing a typical member of any particular group (Rumberger, 1987). Most often, students in all these categories come from poverty-stricken economic backgrounds. They are more prone to social and familial stress, characterized by a lack of control over their lives, by a dim perspective in terms of their future hopes, as well as a limited view of their own personal worth and self-esteem. Frequently, these youngsters are members of a minority group; they are racially, linguistically, or socially partitioned from the mainstream or majority culture population. They are a vulnerable underbelly of a complex, sometimes callous or naive society.

"At-risk" is a metaphoric expression that appeared with increasing frequency in the early writings of the current educational reform movement (National Commission on Excellence in Education, 1983; National Coalition of Advocates for Students, 1985; McDill, Natriello & Pallas, 1986). Rather than drawing its origin from religious orientations, as many educational movements of the past -- "the crusade of the 60s," "save the children" -- at-risk employs a connotation based in medical or epidemiological sources. The label suggests that populations of young people are being threatened by a systematic, external danger in the larger community. There is a fear that some growing menace is out of control, that a particular group may become infected, that unless something dramatic is done soon, young lives will be negatively affected for a long time and continue to spread the venomous impact. The parallels to substance abuse or AIDS infection seem more than coincidental.

But there is also a positive side to the at-risk term. Through proper treatments or positive interventions, at-risk students can be improved; they can achieve success. The compelling problems are rooted outside the child, in the institutions that serve the learner, perhaps in the society itself. Risk can be mitigated by knowledgeable practice and informed understanding. Potential healing powers can be generated in the youngsters themselves, if their instructors and the educational system encourage and facilitate the student's best performance. What students do needs to be separated from who the students are, and what the circumstances of their daily lives involve. Teachers can become mediators of educational excellence if they see their mission differently, and are willing to change their view of many of the students they teach (Whimbey & Whimbey, 1975;

Sternberg, 1981; Feuerstein, Jensen, Hoffman, & Rand, 1985; Presseisen, 1985). Teaching thinking to so-called at-risk youngsters is a challenge characterized by the metaphor's own dimensions.

Particular At-Risk Groups

Who are America's at-risk students? They seem to be the daughters and sons of families whose maladies are interconnected and who fall prey to a host of disastrous conditions. The most visible at-risk population is that of dropouts, students who leave school as early as the law permits and without benefit of diploma or graduation.

Two pictures of typical dropouts are presented in the research literature.

> The picture we have of the at-risk student is that of a young person who comes from a low socioeconomic background which may include various forms of family stress or instability. If the young person is consistently discouraged by the school because he or she receives signals about academic inadequacies and failures, perceives little interest or caring from teachers, and sees the institution's discipline system as both ineffective and unfair, then it is not unreasonable to expect that the student will become alienated and uncommitted to getting a high school diploma.
> (Wehlage, Rutter, & Turnbaugh, 1987, p. 71)

> The researchers found that a disproportionate number of dropouts were male, older than average for their grade level, and members of racial or ethnic minorities. They were likely to attend urban public schools in the South or West. They came from low-income -- often single-parent -- families; many had mothers who worked outside the home, who lacked formal education, and who had low educational expectations for their children. These young people had few study aids available to them at home, and their parents were not interested in monitoring their school or nonschool activities. They had fewer opportunities than their classmates for learning outside of school; their grades and test scores were lower; they read less, did less homework, and reported having more disciplinary problems in school. They also reported that they were unpopular with other students and alienated from school life. They tended not to take part in extracurricular activities, and they said that their jobs were more important to them than school.
> (Strother, 1986, p. 326)

Although statistics on numbers of dropouts are often not collected under consistent conditions nor according to a standardized definition, some guidelines seem to be applicable to understanding the general problems of this population across the country (Hammack, 1986). Hispanic students, the fastest growing minority in the United States, exhibit the highest rate of dropping out, followed by blacks and whites. Black males have actually shown improvement over the past years in their propensity to finish high school (Rumberger, 1987), but because the overall population proportion of blacks is increasing their national dropout rate continues to rise. Furthermore, the number of black students applying to, attending, and completing higher education actually declined over the last several years (Hodgkinson, 1985, p. 15).

That numbers of dropout students are found in large urban districts comes as no surprise. Fine (1986) reports a New York City senior high school in which only 20 percent of a class ultimately graduated from that building. The remaining students were either discharged, transferred -- and perhaps finished at alternate sites -- moved out-of-state or country, received GED diplomas, went to the military or private schools, or were never located at all. The black and Latino students of the school reveal a host of the "nested problems" suggested by Mann (1986) as common to the urban ghetto: little relation between schooling and future income for a young man destined to be a drug dealer; competition with social and family obligations for a 16 year-old girl whose Lupus-infected mother needed her to care for her at home where "nobody speaks English good." One student interviewed, who scored 1200 on his SATs, critically chastised a teacher in whose class there could be no discussion and who appeared to deride each

student's viewpoint whenever it was given (Fine, 1986, p. 396). Perhaps more disturbing are the reflections of multiple students who seemed to accept dropping out of school as the dull, humdrum thing to do without immediate cause and in competition with no particular distraction.

> There is another group that leaves without a critical analysis of schooling or economic benefits, and with no immediate crisis. These adolescents leave school because they live surrounded by unemployment and poverty, have experienced failure in school and have been held back at least once, feel terrible about themselves, and see little hope. Most of their friends are out of school, also without diplomas. Their words speak mostly of disappointment over the promises of schooling that turned out to be a lie.
> (Fine, 1986, p. 398)

And lastly, there are the students literally thrown, pushed, or shamed out of the system by retention practices that keep some youngsters in ninth grade for as long as three years. Dropouts do not necessarily all fit one common description.

Potential dropouts are, in fact, only the tip of the iceberg. Long before students turn sixteen or arrive at their sophomore year in high school, many at-risk youngsters have been evaluated as very underskilled in various content areas. The most obvious is reading difficulty. In a country and society that emphasizes the significance of the written word in education, not being proficient in the decoding of printed text is a first-order school failure. For a variety of reasons, many at-risk youngsters, particularly blacks and Hispanics, have not shared with their classmates the success of learning to read well (Engs, 1987). Their school performance, even in the primary grades, is below standard, well behind white students in the same grades, and the difference is never fully made up (National Assessment of Educational Progress, 1987). In addition, being able to generate or infer meaning from text frequently is associated with

learning to read well and increasingly has been considered the heart of developing literacy (Perfetti, 1984; Brown, 1984). Poor readers fail to comprehend the meaning of much of what they read; they are not able to interrelate ideas suggested by the context of the written material, and they rarely correct their own errors.

> Poor readers compared with good readers show little evidence when reading of such learning activities as skimming, looking back, and other fix-up strategies. They fail to monitor their comprehension deeply enough to permit them to detect violations of internal consistency in texts or even of just plain common sense. They rarely take remedial action even if an error is detected; in short, their comprehension-monitoring is weak to non-existent.
>
> (Brown, 1984, p. 5)

If uncorrected throughout a student's career, it is not difficult to see why students with below-average reading scores are twice as likely to become dropouts as are their colleagues who exhibit normal or above-average reading levels.

Elementary students who are weak in mathematical performance exhibit some similar characteristics as reading deficient youngsters. Russell and Ginsburg (1984) found "their difficulties result from such mundane factors as immaturities of mathematical knowledge (e.g., bugs characteristic of younger children), inattention, poor execution of adequate strategies (e.g., mental addition), or lack of facility in dealing with large numbers" (p. 243). In addition, researchers (Gannon & Ginsburg, 1985) found that social and emotional factors often influence the learning of mathematics, compounding the problems of some at-risk students who -- because of disciplinary difficulties -- make it near impossible to master the developmental skills required by the subject matter. In a world increasingly influenced by the applications of mathematics in technological employment, the at-risk

student pays twice for the lack of school success, once when his/her class peers acquire the mathematical knowledge and throughout the rest of his/her working life, when more demanding jobs will be unavailable because they are beyond the quantitative ability he/she possesses.

There are, of course, other content skills that youngsters are expected to acquire at school besides reading and mathematics. Science, social studies, fine arts, writing, and composition all rely to some degree on reading or calculating to comprehend the material. The significant point is that continued failure to understand these important building blocks of the school's program haunts the academic career of non-achieving students and sets them on a path of cumulative ignorance, if not dropping out. Uninspired in their immature appreciation of the ideas of their culture, it is not surprising to find that truancy often characterizes the at-risk student's involvement at school. And further, the world outside the classroom becomes a much more enticing distraction.

A third group of at-risk youngsters are those who are deemed "disabled," bona fide as dysfunctional in a particular way, and categorized as deficient although seemingly educable. Disabilities in children can exist because of numerous difficulties. For the purpose of discussing at-risk youngsters, two such difficulties are highlighted here. Youngsters suffering from the learning problem called dyslexia constitute one group and those particularly impaired because they cannot speak English, or speak it very limitedly, are a second so-called disabled population.

Dyslexia is a complex neurological condition that prevents the brain from receiving, storing, or expressing information appropriately. One noted psychologist estimates that a majority of the country's illiterates

have some degree of dyslexia (Hochman, 1987, p. 14). Learners with dyslexia, probably influenced in their prenatal development, agonize over tasks most students eventually take for granted: learning the alphabet, writing their own names, spelling simple words like "dog." Many dyslexics go through school ashamed and confused because other children, regardless how able they might be, learn things they seemingly cannot. Many more boys than girls are dyslexic and recent research suggests influence of the male hormone, testosterone, during the second trimester of pregnancy may account for their abnormal brain development (New York Times, 1987). As much as 15 percent of the entire population may exhibit symptoms of various handicapping conditions akin to dyslexia. Many at-risk students are diagnosed "learning disabled," or even "retarded," but fail to be treated for their dyslexic difficulties. Poor classroom behavior, low self-estimates of their own ability, and dislike of school commonly follow their initial unsuccessful start at learning, especially in the areas of reading and language comprehension. Hochman (1987) reports that a recent study of the National Institute of Juvenile Justice and Delinquency Prevention indicates that 36.5 percent of officially adjudicated delinquent boys were so-called "learning disabled," but that many of their frustrations with school work were rooted in dyslexic-based symptoms: poor language functioning, inability to read, stuttering or lisping, short-term memory difficulty, and even lag of maturity.

Students who do not speak standard English form another subgroup often included in at-risk populations. Of the numerous immigrant groups typically found in urban areas, Hispanic youngsters far outnumber students from other non-English speaking countries. They make up three-quarters of the students

with limited English proficiency in American schools (Mezzacappa, 1987b). Hispanic students generally attend school in America's largest cities and constitute healthy segments of those districts' student populations: over 30 percent in New York City; 45 percent in Los Angeles; 52 percent in San Antonio; 32 percent in Miami; 31 percent in Denver; and 35 percent in Hartford (Pifer, 1979; National Commission on Secondary Education for Hispanics, 1984). Hispanic students experience the highest dropout rate of any minority population and their families often live well below the poverty line in terms of family income (Mezzacappa, 1987a; Church, 1987; Cooper, 1987). Before the middle of the next century, Hispanics are expected to replace blacks as the nation's largest minority population.

Not being able to speak English obviously precludes being able to read or write it well. The lack of a common means of communication also hinders interaction in the classroom, especially if the instructor's command of Spanish is limited. Bilingual education, currently a controversial and political issue in the schooling of "language deficient" students, has primarily been looked upon as a means of correcting or compensating for student inadequacies. In the eyes of some educational policymakers, the philosophy behind major programs for Hispanic youth has been wrong-headed and, to some degree, has even created a large part of the dropout problem faced today in the Latin-American community.

> Schools, as transmitters of society's values, in a variety of ways have made a signal contribution to the performance rates of Hispanics -- by shunting Spanish-speaking children from poor families into educational tracks designed for low achievers, by classifying them as mentally retarded or emotionally disturbed, by denigrating their Hispanic heritage, by giving them the message that they cannot, or are not expected to, succeed. In short, the public education system as a whole has neither welcomed Hispanic children nor been willing to deal with their learning problems in any effective way.
>
> (Pifer, 1979, p. 10)

Considering that American Hispanics are a predominantly young, family-oriented, and highly fertile population, demographic estimates suggest that as the nation's largest growing minority their role as an at-risk population presents unique problems for schools (Yankelovich, Skelly & White, 1984). Helping Hispanic youngsters acquire the intellectual skills needed to compete successfully in the American mainstream has a slightly different linguistic twist than the challenge of other students' learning, but the fact that they are an at-risk group in need of assistance -- sharing problems of poverty and poor performance -- is nowhere denied.

This review of who are America's at-risk students suggests there is no simple way to describe this burgeoning population. According to many educational leaders (Olson, 1987), the complexity of untangling the behavioral, cognitive, neurological, and social problems that plague nearly half the students in America's schools requires urgent and immediate attention. In the long run, the current school reform movement cannot ignore the needs of these youngsters and hope to succeed; neither can it pursue remedies such as higher academic standards, increased curricular requirements, and more stringent achievement testing if the poor performance of at-risk learners is not radically transformed at the same time. Central to that transformation is attention to their intellectual or cognitive-developmental needs. Levin (1986), as well as others, sees an impending national crisis on the horizon of our educational future, "the emergence of a dual society with a large and poorly educated underclass, massive disruption in higher education, reduced economic competitiveness of the nation as well as of individual states, and industries that are most heavily impacted by these populations" (p. 13). In short, at-risk students represent the

threat of democratic society's failure itself, the fear that we are creating an ineradicable, untrained underclass, mainly in our inner-city neighborhoods, plagued by a self-perpetuating pathology of joblessness, welfare dependency, and crime. They are a population without vision of the American dream. It may be more comfortable to look the other way, but both as educators and responsible citizens it is incumbent that American schooling address the major learning problems of this complex population. Such a task will not be resolved overnight, but the immediate need seems self-evident.

What Has Been Done; What Has Been Learned?

Concern for the lack of educational success of disadvantaged youth has a long history in American society. Determining what practices work or actually resolve the complex situations facing at-risk students is not a simple feat. What explanations are current? Large, national efforts can be seen as based in at least one of three historic theoretical views, according to several researchers in the field (Banks, 1982; Ginsberg, 1972, 1986). It is useful to examine the premises of these three perspectives as the problem of this study is formulated.

The first theoretical view suggests at-risk students are unsuccessful at school because of cognitive deficits, an inability to engage in conceptual learning which results mainly from their genetic inheritance. Such a position stems from a theory that considers human intelligence an outcome of biological evolution, resting mainly on the existence of immutable general ability, and based largely in studies of correlational data. Rooted in psychological research such as Jensen's (1969, 1981, 1985, 1987) begun in the 1960s, this nativist approach proposes there is a minimal

expectation of change one can anticipate in the cognitive development of lower class children, black students in particular, and concentrates efforts on intervention programs of drill and practice in basic skill achievement and on some positive social development activities. Grouping and tracking efforts, chiefly containing low achieving students with like peers and segregating them from more successful academic students, began in the 1960s and were justified practices according to this initial approach. Remediation in a rather narrow conception became the chief educational goal.

A second theoretical view, one that stressed environmental causes underlying poor students' cognitive deficits, was also launched in the 1960s, rooted in the more liberal climate of President Johnson's "War on Poverty" program and the Elementary and Secondary Education Act of 1965. Cultural deprivation was one of the main thrusts of this view, maintaining that lower class students do not do well in school because of family disorganization, poverty, minimal intellectual and cultural stimulation, and lack of experience in the ways of the more educated, sophisticated community. The programs advocated by cultural deprivation theorists stressed the need to compensate for these cognitive and intellectual deficits, especially to open opportunities for learning and to emphasize basic skills by using intensive, systematic, and behaviorally oriented instruction (Bereiter & Englemann, 1966).

Large, national programs emerged in the 1960s that implemented the cultural deprivation view. Head Start, Follow Through, Upward Bound, and Project Literacy were typical attempts to provide access to learning and to apply the knowledge of social science to the needs of a program of "compen-

satory education which can prevent or overcome earlier deficiencies in the development of each individual" (Bloom, Davis & Hess, 1965, p. 6). At the same time, another thrust of the environmentalist approach was to stress the importance of open access and the integration of minority youths into the mainstream community. Through desegregation efforts, urban students were placed in higher status, racially mixed schools across neighborhoods and even city limits. Citing data from the famous Coleman Report (1966) and further information provided through the U.S. Commission on Civil Rights, massive school busing programs were launched in many American communities. Two goals were sought in this practice: to prove that social class and racial identity could be constructive correlates of students' academic achievement, and to improve the racial attitudes and human relations skills of minority and majority students, so that both could live more harmoniously in America's pluralistic society.

A third theoretical view emerged in the early 1970s, at least partly in conflict with the first two perspectives. Researchers who emphasized cultural pluralism maintained that educational programs for minorities should be based on different premises than had characterized earlier approaches (Banks, 1982). Views of the nativist perspective and the cultural deficits theory were both rejected by bicultural or multicultural theorists as biased or misguided, and, ultimately, as wrong.

> As Labov (1972) pointed out at the time, many of these studies -- like those of Bereiter and Englemann (1966), and Deutch (1967) -- employed rigid methodologies and were not based on an understanding of children in general or poor children in particular. It is easy to get poor children to do badly on some standardized test; it is much harder to employ methods sensitive to their true competence. Anyone who has real contact with poor children, I felt, would realize that much of the psychological research was insensitive, narrow minded, and wrong.
>
> (Ginsburg, 1986, p. 170-171)

The essence of the cultural pluralistic view proposes that at-risk students fail to achieve in school not because they come from deprived cultures, but because their cultures are different from the school's culture. What is most significant, according to this view, is that American schooling has tended to ignore or deride the students' cultures and failed to develop teaching techniques or instructional strategies that are consistent with the learning styles, life styles, or values of the particular learners.

> Many Black children's problems in school stem not so much from limited cognitive abilities as from conflicting orientations as to the conditions and attitudes most appropriate for learning, as well as the difficulties involved in making the transition from the frames of reference and ways of behaving of the home to those of the school. Without conscious awareness of these differences, and the knowledge necessary to use them advantageously, cultural conflict between white teachers' and Black students' expectations are inevitable.
>
> (Gay, 1975, p. 30)

Programs of the 1970s that emphasized the at-risk student's own cultural awareness and history were consistent with this third view of cultural differences. Bilingual instructional programs that sought to build a language bridge between Hispanic and Anglo communities were another programmatic response consistent with the cultural difference position (Cardenas, 1986). Even the so-called "effective schools" literature, strongly rooted in the potential of a positive learning climate in successful schools, emphasized the mutual respect that the multiculturalists maintain necessarily precedes the clear communication and participatory collaboration of a meaningful educational effort (Educational Leadership, 1982; Educational Researcher, 1983; Edmonds, 1986). The third approach stresses the bridging of different worlds as the basis for student learning.

What results were achieved, in terms of helping at-risk students, by programs that emanated from these three theoretical views? Outcomes are much more difficult to track than theoretical approaches. First, there are difficulties in determining exactly what was hoped to be achieved. Did we want rising test scores or social outcomes? Did we want to prevent dropping out, reduce crime, or improve life skills? Did we want English language skills to advance at the expense of losing mother tongue abilities? Did we want to prepare students to be better workers and, if so, for what types of jobs? Once some of these issues are settled, then we are faced with the methodological problems of finding answers to the questions in the overwhelming data that have been amassed by national programs over the past two decades.

As might be expected, research results on programmatic effects for at-risk students are somewhat controversial and frequently mixed. For example, a review of several interventions of Project Follow Through, which emphasized direct instruction, found projects that seemed to have long-lasting effects on the achievement of various groups of inner city youths, particularly in reading (Gerston & Keating, 1987). However, these same reports reveal that the dropout rates in these populations continued to be persistently high, even with better test achievement in content mastery. In addition, little seemed to have improved in the educational climate of many of the participating schools.

> It is impossible to see how segregated education is or to ignore consistently low teacher expectations, as well as apathy, sarcasm, and latent hostility present in some of the high schools.
>
> (Gerston & Keating, 1987, p. 31)

A recent study of the U.S. Commission on Civil Rights (Miller, 1987) claims that desegregation plans implemented over the past two decades produced the highest level of school integration to date. The report also indicates that integration was accompanied by massive declines in white enrollment at the same schools. And finally, results of bilingual language instruction may appear to be equivocal, depending on which study is cited, and what the philosophical perspective of the reviewer happens to be (Mezzacappa, 1987b; Crawford, 1987; Gold, 1987).

Evidence on the effects of early childhood programs developed during this period is also mixed. Several early examinations of Head Start were negative in terms of finding long-term positive outcomes; a recent three-year federal study corroborates those findings (Bridgman, 1982). Longitudinal studies of several exemplary pre-school intervention efforts that stressed cognitive development suggest more successful results: "improved intellectual performance during early childhood; better scholastic placement and improved scholastic achievement during the elementary school years; and, during adolescence, a lower rate of delinquency and higher rates of both graduation from high school and employment at age 19" (Schweinhart & Weikart, 1985, p. 547). A comprehensive school-based program in New Haven schools, emphasizing the development of social skills as well as academic abilities at the elementary level, also seems promising because it not only helps the urban youngsters involved, but develops a staff improvement model that can be replicated in other buildings as well (Comer, Schraft & Sparrow, 1980; Brandt, 1986).

Current efforts to come to grips with the problems of educating at-risk students show that much has been learned from each of the theoretical views

described, as well as from the various outcomes of intervention programs pursued over the past two decades. But what is also indicated is that the problems of at-risk students have by no means been surmounted. High dropout rates persist. The segregation of many ethnic groups, particularly Hispanics (Hispanics face growing isolation, 1987), continues to plague the social fabric of American society. Poverty, both economic and intellectual, marks the lives of many young Americans and makes them victims of social as well as self-inflicted crime (Wilson, 1987). What orientation do contemporary efforts take to meet the education of at-risk students? Three models are described as representative examples of the current scene.

Henry Levin (1986, 1987) proposes a coordinated and comprehensive approach to educating disadvantaged students at the pre-school and elementary levels. Termed "accelerated schools," Levin maintains remedial interventions are inadequate unless they substantially narrow the gap between the academic performance of disadvantaged youngsters and their more advantaged peers. Remedial efforts generally fail to do so. The Stanford professor sees accelerated schools as transitional experiences "designed to bring disadvantaged students up to grade level by the end of sixth grade" (Levin, 1987, p. 20).

Levin's accelerated approach includes four major components: providing enriched pre-school experiences, improving the effectiveness of the home learning environment, improving the effectiveness of the school in addressing the needs of the disadvantaged, and assisting those from linguistically different backgrounds to acquire skills in standard English. Levin's third component, augmenting the school's resources for effectiveness, seems to be the most overshadowing aspect of the accelerated model, as he sees the

school's social-cognitive success with disadvantaged students as the antidote to the most persistent cause of dropping out: serious academic deficits. Included in Levin's view of schooling are elements of assessment used for diagnostic and program development purposes, a curriculum that emphasizes language -- which is described as "reading and writing for meaning" (Levin, 1987, p. 20) -- parental involvement in schooling, extended school days with afterschool activities in physical education and art experiences, independent assignments, and community involvement.

Levin emphasizes the importance of school-based decision making and curricular management by the teachers involved with at-risk youngsters. He is positive about the use of peer teaching and cooperative learning as significant means of "changing the organizational structure and incentives in the classroom" (Levin, 1986, p. 27). Field experiments of the Levin accelerated school model open on the west coast in the fall of 1987; it remains to be seen if improved achievement and better self-concepts among the students involved are actually realized. To Levin, such "bold stands" are important and timely interventions for education to take; he believes American society can no longer afford to neglect the needs of either the at-risk students or their educators. To continue to create "educational discards" marginal to mainstream education, he suggests, is to design our own cultural demise.

Wehlage and his associates in Wisconsin (Wehlage, Stone, & Lesko, 1982; Wehlage & Rutter, 1986; Wehlage, Rutter, & Turnbaugh, 1987) present another current model program for working with disadvantaged secondary students, addressing, in particular, the potential problem of adolescents dropping out of school. They believe such a program needs to be based on

goals that represent some fundamental changes in the way schools interact with students and the kinds of educational experiences created. Although Wehlage and his colleagues are obviously aware of the critical background factors that plague at-risk students, such as poverty and minority status, their focus is on what schools can actually do for the two major maladies characteristics of at-risk students' schooling: boredom and alienation. At-risk learners are not challenged by their school work -- repetitive remediation in low-level basic skills fails to spark their interest or energy. Training in narrow vocational areas, these researchers say, suggests that the fruits of staying in school are less desirable than life on city streets, at least until one drops out and, too late, faces the reality of being unprepared. The model program they advocate is built on two major goals: experiences at school that will engage secondary students' interest and participation, and strong social bonding that leads to personal exchange with other students and with teachers.

The Wehlage model includes a school-within-a-school approach or the establishment of an alternative site, similar to Levin's special accelerated buildings. This model advocates small, personalized settings as a departure from the factory-like, 19th century units that characterize many older, large-city school systems. But the Wehlage model also addresses psychological-social space as much as physical reality. Four inter-related categories influence the model program: administration and organization, teacher culture, student culture, and curriculum. These are the important factors that need to be emphasized, they say, in creating the educational experiences needed by at-risk youth. Most importantly, these Wisconsin educators maintain, the identity and autonomy concerns faced by both the teaching

staff and the students are key to student success (Wehlage, Rutter, & Turnbaugh, 1987, p. 72).

The Wehlage viewpoint poses the teacher of at-risk students as much more than a purveyor of subject matter and the school very different from a storehouse of accumulated fact (Wehlage & Rutter, 1986, p. 9). Schools are where certain commitments are made about content that is not trivial and processes that are significant far beyond academic classrooms. Students must volunteer for this program and are required to agree to work by a common set of rules and specific standards of behavior and excellence. The Wehlage model stresses individualized instruction and promotes cooperative decision making. Only a limited part of the curriculum ought to be remedial, they say (Wehlage & Rutter, 1986). What is studied at school ought to be done in an active orientation with close supervision by a supportive teacher. Collegiality is a goal in the overall atmosphere of the effective school. In this model, an emphasis on experiential learning, too, is often tied to real work in the real world. The program must be geared to what students individually are able to do, and the student's feelings of success and accomplishment are particularly emphasized.

Some results of implementation of the Wehlage-Wisconsin model have begun to be examined (Wehlage & Rutter, 1986). Reduced school failure and decreased dropouts are the main goals of the program. Being better prepared for the world of work, especially with outcomes of self-esteem and a positive view of one's control of one's own existence, are additional thrusts of the model. The Wisconsin Youth Survey, an instrument developed to help assess implementations of the program (Wehlage & Rutter, 1986, p. 15), is now being used to amass data about students' personal orienta-

tions prior to programmatic efforts and following initial treatments. Although results are not yet fully analyzed, some of the characteristics on the Wisconsin scale have been found to be significant in at-risk students' development. What is more important, it seems that the results of the scale's implementation may help researchers fathom the myriad of detail about what works and what does not succeed in such a focused effort to help at-risk students. With such an instrument, researchers may be able to understand the aspects of a strategy that are sound and the orientations that need further development. Perhaps the most elusive characteristic, the improvement of school climate, can be more effectively dealt with on the basis of the research results from Wehlage and his associates. Given the findings of Gerston and Keating (1987), where such poor climates still persist after some interventions, that is not a mean accomplishment in the education of at-risk students.

A third model program currently advocated to help at-risk learners has been developed by Cummins (1986) of the Ontario Institute for Studies in Education. This model is particularly sensitive to difficulties of the at-risk Hispanic student, but is also applicable to minority students generally. Cummins addresses the cultural differences that exist between educational institutions and the variety of students who stand outside the majority or mainstream population. He advocates an approach in which the major thrust is to alter significantly the relationships between educators and minority students and between schools and minority communities. What is required, Cummins (1986) proposes, are "personal redefinitions of the way classroom teachers interact with children and communities they serve" (p. 18). He organizes his model on three kinds of power relations that

influence schooling: classroom interactions between teacher and student, relationships between schools and minority communities, and intergroup power relations within the society as a whole.

Cummins maintains that the transformation he seeks is influenced by four institutional characteristics in schools that -- for the sake of at-risk youngsters -- need to be addressed.

- To what extent are minority students' language and culture incorporated into the school program?
- To what extent is minority community participation encouraged as an integral component of children's education?
- Does the pedagogy employed in school promote intrinsic motivation on the part of students to use language actively in order to generate their own knowledge?
- To what extent do professionals involved in assessment become advocates for minority students? (p. 21)

Cummins proposes that previous educational reforms, which were generally ineffective in alleviating the problems of at-risk students, did not reach their goals because they ignored these issues and thus could not reverse the circumstances responsible for minority group failure. He sees such conflict between majority and minority populations characteristic of the negative relationships between groups of have's and have not's all over the world.

Cummins obviously picks up on the multicultural or cultural pluralism theme as a viable approach for dealing with problems of at-risk students in schools at the end of the twentieth century. He is aware of demographic changes that have been presented by various researchers (Hodgkinson, 1985). He cites the work of Ogbu (1978, 1986) and Feuerstein (1980), among others, as discussion bases for understanding the inherent conflict between a dominant group and a dominated group in any society. Conditions of their

conflict "include limited parental access to economic and educational resources, ambivalence toward cultural transmission and primary language use in the home, and interactional styles that may not prepare students for typical teacher/student interaction patterns in school" (Cummins, 1986, p. 22). The four issues to be faced in this context of conflict are then elaborated by Cummins. Language needs to be "additive," he says, treating the student's bicultural-bilingual capacity as a resource for learning, and stressing the power of meaningfulness in the child's tongue as a cultural bridge to be enhanced (p. 25). Relationships encouraged between the school as an institution and the students' community will lead to positive collaboration, says Cummins (p. 27), and he maintains this cooperation has pronounced effect on the students' success at school.

In terms of pedagogy, Cummins stresses the need for reciprocal interaction in the classroom, encouragement of student action and interdependence, and a downplay of the teacher's traditional "transmission" role (p. 28). Learning requires a genuine dialogue between student and teacher in both oral and written modalities, he advocates, ideally integrated with curricular content that is not taught as isolated or fragmented subjects.

> In short, pedagogical approaches that empower students encourage them to assume greater control over setting their own learning goals and to collaborate actively with each other in achieving these goals.
>
> (Cummins, 1986, p. 28)

Finally, in the area of assessment, Cummins sees at-risk students largely being judged by a deficits-model approach which seeks arbitrarily, on the basis of one instrument's evaluation, to label students in simplistic, uni-dimensional ways rather than to fathom out the intricacies of

their learning difficulties and suggest alternate ways for drawing out their true competencies. Experiments are needed, says Cummins, to put the four key factors into operation and to examine their effects on at-risk youngsters' performance. A few such experiments have begun, but like Levin's and Wehlage's models, there are few hard data yet available to attest to the soundness of Cummins' suggested innovations. Still, he believes knowledge is readily available to propose changes in the ways schools educate at-risk students. Obviously, teaching students to think needs to tap into this knowledge.

Teaching Minority Children

The effective instruction of minority children seems to be a key topic of concern in addressing the cognitive development of at-risk students in American schools. Past history suggests we know some of the reasons why instruction has not been particularly effective. "A divorce between critical thinking and the basic skills helps widen the gap between schools for the poor and schools for the affluent," says Cuban (1987, p. 17), and he derides the "dittos, seatwork, and pre- and post-tests" that rob at-risk students of interesting assignments which might otherwise stimulate their learning. Other researchers focus on missing interaction -- or the lack of exchange -- that ought to take place in the act of teaching itself. Poor teaching, observes Cummins (1986), can actually enforce negative learnings on the part of the child, and further, he suggests, that minority youngsters "frequently receive intensive instruction which confines them to a passive role and enduces a form of 'learned helplessness'" (p. 27). These patterns, according to Boykin (1986), are emphasized by a kind of structural sorting practiced by schools and the forming of remedial or retardate

learning groups whose self-image is one of failure and a "cannot-will not-should not do" mentality. Boykin (1986) maintains not only is the student's cognitive orientation involved (I cannot...), but also his/her motivational state (I will not...), as well as the learner's value-belief system (I should not...) (p. 76). The road to alienation and dropping out is paved with numerous small stones shaped by many classroom experiences.

The schooling of students with limited English proficiency also offers some insight into the nature of poor instruction. Problems of reading need to be separated from difficulties with language, Hakuta and his associates (Hakuta, 1986; Hakuta & Gould, 1987) propose. It is not that Spanish-speaking at-risk students cannot reason sufficiently, rather that their cognitive understanding of literacy is quite limited -- their homes, like those of black youngsters, are not geared to the printed word -- and in both English and Spanish particular skills and instructional strategies are lacking. Laosa (1988, 1984) and De Avila and Duncan (1985) underline the socio-economic and intellectual aspects of the Hispanic student's education. They suggest that a teacher presents students with both a cultural perspective as well as an academic orientation, and both aspects require two-way communication and interaction in the classroom to make learning succeed. Laosa (1977a) found more classroom teachers were prejudiced against Hispanic youngsters' language than their divergent ethnic background. In addition, American teachers are not generally comfortable or proficient in their use of a second language (Mezzacappa, 1987b).

From this extensive research and study, what seem to be the most informative guidelines for the successful instruction of minority children? Researchers on classroom instruction (Stallings, 1981; Brophy & Good, 1984;

Brophy, 1986, 1987) emphasize that good teachers stress academic objectives in setting expectations for students, and they carefully allocate instructional time. Such teachers use effective management in the classroom and pace work to keep students active and interested. Curricular materials are adapted to coordinate well with individual student's particular learning characteristics. Brophy (1986) maintains that lower socioeconomic status learners "need more structuring from their teachers, more active instruction and feedback, more redundancy, and small steps with high success rates" (p. 1073). This is not a departure from good instruction for all students, but Brophy agrees with Calfee (1987) that the central function of good teaching is the ability to explain the lesson content to the learner; why a strategy is useful, why certain information is important for problem resolution. At-risk youngsters may need more extensive explanation to generate meanings necessary for their understanding.

One of the most important aspects of effective instruction, as viewed by many researchers today, is the significance of interactive discussion during instruction (Lipson & Wixson, 1986). The major concern is not one of innate skill, but under what conditions the learner employs his or her knowledge and becomes active in the learning experience. Brown and her associates (Brown, 1984; Brown, Palincsar & Purcell, 1986; Brown & Campione, 1986; Palincsar & Brown, 1984) report on their research concerning the reciprocal teaching of comprehension-fostering activities in reading. They conclude that at-risk youngsters have much to gain by cognitive training that includes scaffolding techniques, "where an expert provides a supporting context in which students may gradually acquire skills" (Brown, 1984, p. 9). They propose that seemingly disabled learners become successful in

a classroom based on such reciprocal teaching (Brown, Palincsar & Purcell, 1986). The teacher first models the desired comprehension skill; gradually student members in a working group become jointly responsible for understanding the material and helping their fellow students construct common meaning (Brown & Campione, 1986). The importance of questioning and the role of student self-direction and monitoring of performance are stressed in this reciprocal approach (Brown, Palincsar & Purcell, 1986, p. 106), in contrast to traditional practices which may have kept poor readers isolated and focused on pronunciation, decoding, and relatively low-level cognitive skills. The advocates of reciprocal teaching underline the importance of learning reasoning strategies within a content domain (Brown, 1984), but they are emphatic that it is the overt and explicit delineation of these specific strategies, learned collegially, that will help academically weak students deal with the particular tasks central to learning at school. They suggest, in fact, that it is the absence of such an approach that literally creates the stereotype of a disabled learner. Parallels of the reciprocal teaching model, presented in approaches like cooperative learning (Slavin, 1980, 1981; Johnson, 1981; Deutsch, 1986), are also discussed extensively in the research literature. Recently, these approaches have been advocated for at-risk youngsters, too (Slavin, Karweit & Madden, 1987; Ascher, 1986; Slavin, 1987).

In summary, research on at-risk students' instruction suggests that a complex and growing school population is not without hope for learning in the nation's schools. Their difficulties are not trivial; demands for mastering both basic and higher order processes in various content domains stand in sharp contrast to their underskilled and ill-motivated profiles.

The need for schools and educators to alter their current approaches, both in motivating and instructing these youngsters, is evident and supported by numerous studies and various model projects. Slavin (1987) sees this thrust as a major refocusing of the entire Chapter 1 effort. The significant question seems to be whether the nation's educational systems, as a whole, are ready to initiate and practice what is already known in the research community.

Proposals to teach thinking as a focus of schooling in American education date back at least to Dewey (1910). Much of the psychological and philosophical literature of the 20th century includes inquiries about how humans reason, critique, or judge the circumstances of their existence (Sternberg, 1985; Presseisen, 1986), and Bruner (1960) launched a pedagogical movement 30 years ago to incorporate such topics into the instructional programs of elementary and secondary schools. The current movement to provide cognitive instruction to all youngsters shares these historic roots, but the present effort is based on more recent research and is responsive to a much more detailed understanding of the ways human beings recall, use, and generate information for better thinking (Chipman & Segal, 1985; Jones, 1986). What are the main emphases of the current movement to teach thinking to American students? Of what significance is such a movement for the instruction of the country's growing at-risk population?

The Importance of Cognition and Metacognition

Jones (1986) has characterized cognitive instruction "as any effort on the part of the teacher or the instructional materials to help students process information in meaningful ways and become independent learners" (p. 7). A great deal of effort has been extended in recent years to define and describe the particular skills of cognition. Thinking and learning skills, as characterized by Sternberg (1981) and catalogued in numerous studies (Beyer, 1984; Costa, 1985; Presseisen, 1987; and Marzano, Brandt, Hughes, Jones, Presseisen, Rankin & Suhor, in press), generally include a menu of core thinking operations and various more complex, higher order processes like problem solving, conceptualizing, decision making, critical

thinking, and inventive or creating thinking. These are the cognitive operations most often predictive of success at school, and the view taken by many current researchers suggests these are the key behaviors that constitute intelligence itself (Sternberg, 1981; Chipman & Segal, 1985). Moreover, the advocates of this movement maintain that such behaviors can be learned by all students, including those at-risk (Whimbey & Whimbey, 1985; Sternberg, 1984).

One of the major thrusts of teaching thinking involves not only learning cognitive skills such as analysis, classification, and evaluation, but also becoming conscious of the strategies that are appropriate in the particular cognitive task. Metacognition, thinking about how you think, the "ability to know what we know and what we don't know" (Costa, 1984, p. 57), is now viewed as central to the development of skillful thinkers. It is not adequate to master the core thinking skills and complex processes per se; the learning-to-learn strategies that enable students to plan, monitor, and revise their own activity for more productive performance are also required for competence development and for the independence of the learner. In the complex world facing students today, it is suggested that the flexibility and competencies embedded in the techniques of learning how to learn may have the most lasting influences on student achievement (Chipman & Segal, 1985).

Thinking metacognitively is being concerned with the sequence of cognitive tasks. Jones (1986) reports on reading research that emphasizes what the learner does before, during, and after reading. Initially, there is concern for activating prior knowledge and linking what is being learned to previously mastered materials. During the task, learners need to attend

to their own activity, to monitor their comprehension as they try to complete the work. And finally, students need to recapitulate, to review and debrief where they have been; to see what they have done in terms of the outcomes of the work and relative to their understanding of the consequences of their performance. Sternberg (1983) sees a similar sequence in the learner's building of executive skills in general problem solving. He proposes a nine-step pattern starting with problem identification, extending to the selection of processes, strategies, and representation, through allocating resources and monitoring solutions, to dealing with feedback and, finally, to translating activity into an action plan for problem resolution. In intellectual development, metacognition lies at the heart of Sternberg's executive component.

The importance of the independence of thinking is also stressed in the literature on metacognition. Dispositions of the learner toward being a critical thinker need to be fostered in learning to be metacognitive. Ennis' (1985) research on critical thinking over the past 30 years highlights such characteristics. Being flexible and open-minded, seeking alternatives, and persisting in carrying out a task are traits that help the learner be more effective. Costa (1985) stresses the significance of students being able to talk freely about potential problem solutions with their peers and having the opportunity in the classroom to develop new strategies and to practice them on their own. It may be that metacognition cannot be taught directly, as many theorists emphasize the direct teaching of the more basic cognitive skills, but some say freely experiencing metacognitive realizations is key to the acquisition of the higher thinking abilities. Kamii (1984) underlines the importance of autonomy for the

learner, including the freedom to err and the right to be respected even when making mistakes.

Researchers stress that the development of metacognitive ability is something that grows over time. One experience at scientific method, an odd lesson or two that emphasizes problem solving or information generation, will probably not be sufficient to develop metacognition. It is the development of an open attitude toward thinking, reasoning, and dealing with data that particularly counts. Nickerson (1986b) notes the parallels between reasoning and the task of figuring out what to believe. The thinker must first gather all the evidence relative to an issue, then weigh the evidence as impartially as possible, and finally decide what explanation is the best or most fitting. Better thinkers develop "nuanced judgment," says Resnick (1985), after experience with content and after extensive wrangling with problems rooted in contextual relationships. Although thinking skills can be learned in content-incidental and perhaps even content-free situations, most advocates of cognitive instruction (Glaser, 1984; Kuhn, 1986) maintain it is important to master skills embedded in specific subject disciplines. The methods of the particular disciplines reflect the rules or criteria of problem solving in that domain, and such standards are not unrelated to the appropriate strategies one builds over time in developing metacognitive ability.

The Role of Mediation in the Classroom

A second major thrust in the movement to teach thinking focuses on the role of the teacher as a mediator of learning in the classroom. Not only is the teacher important because of the need to instruct students directly in the core thinking skills and perhaps in the complex or higher order

processes, but it is proposed that the teacher's influence on the student's cognitive processing of the lessons themselves is highly significant. How the learning is managed, how interactive exchange occurs in the classroom, and how students get feedback to their responses all influence the quality of mediation in instruction (Costa, 1984).

The teacher's role as a questioner and a respondent to questions is one of the most discussed aspects of classroom mediation. Wassermann (1987) suggests some teacher responses can inhibit or even stop a student's thoughtful pursuit of an issue. Teachers can ask questions that are so low level that they fail to engage the student's thinking and, all too often, teach that learning consists of simple, one-word answers to queries seemingly unattached to other issues or to more complex sources of information. Ideally, teacher questioning in the thinking classroom calls for the instructor to turn students back onto their own ideas, to raise a matter to higher levels of cognitive reflection, and to suggest different and challenging ways of looking at the same problem. Haywood (1986, p. 3) suggests a series of questions that teachers might consider using to enhance classroom mediation.

1. What do you need to do next?
2. Tell me how you did that?
3. What do you think would happen if _____?
4. When have you done something like this before?
5. How would you feel if _____?
6. Yes, that's right, but how did you know it was right?
7. When is another time you need to _____?
8. What do you think the problem is?
9. Can you think of another way we could do this?
10. Why is this one better than that one?
11. How can you find out?
12. How is _____ different (like) _____?

It is interesting to note how many of these questions direct the students indirectly to the next best metacognitive consideration.

Copple, Sigel, and Saunders (1984) caution educators not to interfere with questions when young learners are busy doing their work; the wise teacher waits for appropriate times to intervene. Similarly, they suggest that teachers shouldn't steal the student's thunder by answering a question before giving adequate time for the student to reply. The research on wait time in classroom activity confirms such a mediational stance. The social and affective support of the student by the teacher are other important aspects of mediation in the thinking classroom. Although the teacher is the prime interrogator in initial learning, good teaching of thinking occurs in a social setting and students need to be brought into the interaction positively and willing to be engaged. Much of the current research on teaching thinking reflects a renewed interest in the work of Vygotsky, the Russian neuro-psychologist, and in the studies of Feuerstein, the Israeli clinical psychologist, both of whom stress the importance of the learner's experience as influenced by linguistic exchange and by the intervention of the classroom teacher.

Much of what the teacher says, believes, and does in a classroom influences the students' perceptions of their own abilities, their personal view of themselves and their own competence, and their motivation to pursue the cognitive tasks at hand. Feuerstein (1981) stresses the importance of communication patterns in the classroom. Through a variety of ways of communicating, he says, the teacher conveys three important aspects of mediation: intentionality, anticipation, and meaning. Intentionality engages the learner in perceiving, registering, or performing; anticipation takes the student beyond the immediate -- to learn to deal with the consequences of thought and action in the future, and meaning gets at the heart

of understanding and comprehension (Feuerstein, 1981, p. 97). Vygotsky (1962) speaks of the child's "zone of proximal development," the potential every child possesses for learning based on personal experience, but separate from development itself. By carefully observing what every learner does, the teacher of thinking builds an index of the developmental functions that students are in the process of completing (Portes, 1985). The teacher then can become aware of each student's unique mental profile and anticipate what the overall needs of the entire class of youngsters would be in learning particular content or subject matter.

Finally, mediation suggests that learners only gradually develop their own self-regulative behavior -- that is, some learners do. Kuhn (1986) suggests we need to take a life-span approach to understanding changes in the child's thinking. As thinkers gain experience in solving problems, as they begin to see patterns of strategies that are useful for working in particular content domains, better thinkers correct their "theories" and "mini-theories" and revise their interpretations of classroom work. From her constructivist view, Kuhn sees "cognitive development as a process of theory revision" (p. 508). In the long run, learning to think for all students is learning to self-correct or regulate, and the teacher's mediational role ought to contribute directly to that progression. Work by Resnick (1985) and Glaser (1986) on the development of expert systems suggests a similar position regarding learning and cognitive development.

The role of assessment and testing ought to be considered, too, in the self-regulatory development of thinkers. Potentially, tests show what students don't know, as well as what they seemingly understand. Serious concern needs to be raised regarding the kinds of evaluative instruments

that are used as analytic tools of students' cognitive performance. In the teaching of thinking, tests ideally ought to get to the basic understandings behind content comprehension. Jones (1986) rejects norm-referenced tests as measures of individual achievement because they fail to attend to the student's cognitive development, and they often stress only low-level thinking objectives. Rather, she suggests, content-referenced examinations should be employed in the teaching of thinking. Such instruments can evaluate what actually has been taught and understood, as well as better inform the teacher about what is still needed in classroom instruction. Obviously, testing as a mediational tool for learning requires that the assessments to serve both the student's cognitive needs and inform the instructor's classroom practices. This requisite may be even more important for underachieving learners, partly because they require more diagnosis and partly because they are harmed more by low level tests.

Materials and Programs for Teaching Thinking

A third notable activity in the current movement to teach thinking is the development of instructional materials and programs of all sorts to use in elementary, secondary, and even college level classrooms. Unfortunately, finding or using such specific materials is often the practitioner's first step, even before the major conceptual understandings of teaching thinking are understood or examined (Sternberg, 1987; Presseisen, 1987).

This study cannot begin to describe or analyze the wealth of thinking materials which has recently been produced, but a discussion is warranted on the general nature of major programs and their potential use with at-risk students.

Thinking skills programs differ on many dimensions, as Nickerson (1984) has indicated, but all of them generally emphasize some specific cognitive operations which are delineated in the materials provided to a particular group of students. Thus, some programs emphasize a variety of skills -- such as general reasoning, learning-to-learn skills, and problem solving. Other programs stress critical thinking above other concerns, and still others advocate the teaching of creativity and the expansion of intellectual processing in a variety of modes or with specific kinds of materials. Costa (1985) has included a number of curricular program descriptions in his useful volume, Developing Minds, and readers can check there for developer descriptions of such programs as Strategic Reasoning, Odyssey, and Structure of Intellect which emphasize a variety of thinking skills; Philosophy for Children and Project Impact which stress critical thinking; and CoRT and Instrumental Enrichment, which emphasize the development of expansive mental processes and divergent thinking heuristics. These programs are a good representation of the variety of curricular approaches to teaching thinking, but they are not the total available selection.

Most thinking programs are based on a particular conceptual focus and take some position on the need for the special preparation of teachers to use the material. The developers of Philosophy for Children and Instrumental Enrichment, for example, require relatively extensive teacher preparation to instruct their programs. They have particular ideas about how skills are developed, what student behaviors are being sought, and how learning ought to be assessed (Lipman, Sharp & Oscanyan, 1980; Feuerstein et al, 1985; Link, 1985). Other developers focus less on the teacher's

involvement and more on the students' motivation to use their own cognitive abilities. CoRT requires a minimum of teacher preparation, but its developer seeks to involve students in new ways of looking at problems and imaginative schemes for resolving them (de Bono, 1967, 1985). The developers of Tactics, originally the McREL Thinking Skills program (Marzano & Hutchins, 1985), take a somewhat middle ground between the need for teacher preparation and the generation of interesting examples of activities to show teachers how to embed important cognitive tasks into the contents of teaching.

Some programs are not really curricular entities at all, but are approaches or strategies for relating the teaching of thinking to regular classroom activity and curricula, as well as to general planning for instruction and assessment (Beyer, 1987; Meyers, 1986; Worsham & Stockton, 1986). This wealth of material indicates there is no ideal thinking skills program, there are many approaches. The approaches differ according to the intentions of the author or developer, and in terms of what is considered the most important aspect of learning to think. Nearly every approach addresses the cognitive and metacognitive skills of learning. To various degrees, programs delineate the kinds of mediational behavior expected of the teacher and, to a less extent, the role of assessment or testing is generally discussed. Programs differ, too, on the populations for which they are intended, including the age group and the particular needs of students and their conditions of learning. It is up to the user to consider the needs of his/her student population and to match these requisites to the appropriate instructional materials for teaching them to think. It may be that no commercially available program will serve a particular schooling

situation. Users need to develop criteria for making a program selection or plan and let these standards serve as guidelines for their deliberation. Some researchers (Nickerson, 1984; Sternberg, 1985a) have considered the contents of such criteria; central to many considerations is the question of particular programs' effectiveness.

It would be ideal to have clear, clean data on various thinking skills programs and their ability to accomplish what they have set out to achieve. Unfortunately, such unequivocal proof does not exist. Many of the programs for teaching thinking have concentrated their energies on developing materials and guidelines for instructors; few have had the resources to run extensive, long-term research projects about the outcomes of implementation. This is not to say that research has not been conducted or that studies of implementations are not available with findings on a particular program.

Sternberg (1986) has reviewed the research on five well-known, diverse programs: Instrumental Enrichment, Philosophy for Children, Structure of Intellect, Problem Solving and Comprehension, and Odyssey. He found many contaminating factors in studies of the programs and lack of consistent research data. But, he also found hopeful signs and called for more formal research of program implementations by objective, independent, and skilled researchers. Savel, Twohig, and Rachford (1986) conducted extensive studies of Feuerstein's Instrumental Enrichment (FIE) program and, although they concluded the world-wide efforts "failed to find clear FIE effects," they also note "there is a subset that produced data that are striking and suggest that FIE may indeed be having an effect even though it is not clear just what that effect means" (p. 401). They found there are statistically significant FIE/comparison group differences that have been observed in a

number of populations in at least four different countries. Outcomes most often reported in these studies have included effects on certain standard nonverbal means of intelligence, largely measures of skill in processing figural and spatial information. These same researchers determined that the age range that seems most influenced by the FIE program is that of 12-18 year olds. Sternberg (1986) reports similar findings on the Feuerstein program.

Herrnstein, Nickerson, de Sanchez & Swets (1986) report on studies of Project Intelligence, the forerunner of the Odyssey program that was implemented in Venezuela in a Spanish language edition. They conclude, "a 56-lesson course directed toward fundamental cognitive skills was shown to have sizable and beneficial effects on a sample of Venezuelan seventh graders from economically and educationally deprived backgrounds" (p. 1288). They particularly note that a new, dynamic interaction between teacher and students resulted from the program, and they suggest the classroom was profoundly changed by the course for both teachers and students.

The Philosophy for Children program recently released an extensive review of 14 research studies conducted at numerous sites across the United States over the past 15 years (Philosophy for children: Where are we now, 1986). The report shows impressive results in accomplishing the goals of the program with a variety of school populations, including urban black and Hispanic groups. Most of these studies used the New Jersey Test of Basic Skills as their major assessment instrument. Individual school districts reporting on a year or two implementation of the philosophy program may not have yet found significant score changes for students in mathematics or reading ability, as reported by standardized examinations, but some

districts have attributed to the program decided improvement in students' ability to reason and to discuss complex issues, including drug and alcohol abuse, as well as improved teacher performance (Martin & Weinstein, 1983; Shipman, 1982). This finding suggests it is important to understand what objectives a thinking program proposes and to follow the ways such objectives are pursued in the material.

Research on Project Impact, a National Diffusion Network bona fide program, suggests that the critical thinking orientation of the program does relate well to content instruction in language arts and social studies in the middle school (Zinner, 1985). Mathematics teachers have also suggested this critical thinking approach helped underachieving students better understand the nature of mathematics problems, while other instructors claimed improved teacher morale developed with use of the program. Project Impact has also had success in a Spanish-language version. Research on the CoRT thinking materials, although not as extensive as studies of the Feuerstein approach or of Philosophy for Children, has suggested the de Bono approach has a positive influence on some delinquent and violent youngsters in England, as well as validity in being used as an approach for analytic discourse in an Australian science classroom (de Bono, 1985). Edwards and Baldauf (1987) report that CoRT-1 shows significant results in helping treatment students on their normal teacher-designed, content-based academic tests -- especially in language arts and social science courses.

In sum, impressive but not conclusive data have been amassed on the effectiveness of numerous thinking skills programs and materials with a variety of students and in multiple types of school settings. de Bono (1985) makes a distinction between hard data and soft results. The

research evidence to date is not clear, significant, quantitative information based on "a large number of implementations, specific factors, and replicable systematic conditions," as called for by Sternberg and Bhana (1986, p. 67). Rather, some of the larger, more global objectives of the thinking programs indicate positive changes in the general nature of many students regarding intelligent behavior.

> ...the confidence of those who have had training in thinking, the focus of their thinking, the effectiveness of their thinking, their structured approach and breadth of consideration. Teachers often sum up these factors as 'maturity,' in commenting about these children who come to their classrooms after some training in thinking.
>
> (de Bono, 1985, p. 208)

Perhaps behind such "soft" results lie some real opportunities for major, quantifiable change; obviously, more research and more implementation is needed to pursue such information. What is important, suggests Nickerson (1986), is that children be given the chance through regular instruction to practice thinking and to model the examples their teachers provide in motivating, cognitive instructional lessons. What is also significant, it would seem, is that at-risk students be given just as much opportunity to experience this type of instruction as their more able peers.

Thinking, Achievement, and At-Risk Students

Can the teaching of thinking help educators better understand the problems they face in addressing the challenge of improving the education of at-risk students? Can the experience of the cognitive instruction movement inform the nation's educators in working with the growing population of young people who fail to find success in academic work at school?

This study takes the position there is much to interrelate between the two major areas of investigation reviewed in the above discussions. Several overarching issues emerge as key aspects of concern.

First, there seems to be a large credibility gap on the part of American educators as to whether at-risk students can learn to be successful learners. Programs like Levin's (1986, 1987) and Wehlage's (Wehlage & Rutter, 1987) special, accelerated approaches may be efforts in the right direction, but they need to be made available to all at-risk students and need to address the question of how to concentrate on some particular skills, at special times of development, and related in specific ways to the content domains of regular schooling. At heart is the issue of what kinds of achievement do we expect to attain with at-risk youngsters? Reform programs that set out to show gains mainly in terms of standardized test results may have limited success, as results from many of the thinking skills programs have indicated. Educators may need to explore the differences between hard and soft data on student change, as de Bono suggests. Further, the question of the meaning of remedial learning may need to be explored. Shouldn't the potential for learning in underachieving youngsters be addressed, as Feuerstein (1979) proposes -- and presents his Learning Potential Assessment Device to obtain better diagnostic data? Programs for at-risk learners may need to consider that their charges are only temporarily disabled and that better teaching conditions can pertain to the advancement of these youngsters. Children are modifiable in their intelligent behavior; starting early in their development, as the Perry Pre-School model (Berrueta-Clement, Schweinhart, Barnett, Epstein & Weikart, 1984) advocates, may be an important maneuver to avoid students dropping out after grade nine. But equally important, in that effort, are the kinds of skills that are the overarching goals of such a program.

The emphasis on higher order thinking and not "just basic skills" is a key concern in addressing the education of at-risk students. To keep lesser achieving students only in the realm of the basic may mean that they are dependent thinkers all their lives. The experience of the thinking skills programs in seeking to teach metacognitive behavior may be one of the most important aspects to pursue in the education of at-risk students. At-risk students are episodic in their learning, they fail to make connections that others may see more spontaneously, and too often they miss the central meaning that is key to learning. These are areas that thinking skills programs and related materials have addressed both in curricular ways and through alternative instruction. It would behoove educators of at-risk students to be mindful of the emphasis on metacognition in teaching thinking and learn about the successes that certain programs have had in meeting that objective.

A third very significant aspect that teaching thinking may focus on for success with at-risk students is the unique role of the teacher in classroom instruction. As Wehlage and his associates (Wehlage & Rutter, 1987) emphasize, social bonding -- the mediational role of the teacher -- needs to be expanded in the education of at-risk learners. What unique mix of classroom coach, gentle questioner, high motivator, and steady guide needs to be groomed for working in the thoughtful classroom of new-found learners? This is an area of concern for pre-service as much as in-service educators; for teacher education as well as staff development. Key to the role of the effective teacher of at-risk learners is the significance of the use of language in instruction. Boyer (1987) has stressed the centrality of language in education; the research on teaching thinking underlines the

importance of language not only as the form of presentation -- reading -- but as the lifeblood of communication. Teaching at-risk youngsters to think and to express their ideas about the meaningfulness of content domains provides an area for extensive dialogue between the teachers of critical thinking and the instructors of middle and secondary school classrooms. It is not only a matter of reading, for there are many literacies to teach (Eisner, 1987). These cognitive areas need to be treated differently, and there needs to be as much concern with re-mediating the cognitive processes of at-risk students as with building new meaning in learning contents. As Cummins (1986) proposes, studying the ways language bridges the gap between not understanding and knowing is a major challenge for the mediational education of at-risk youngsters. If those students also happen to speak Spanish as their mother tongue, there may be different and varied issues to consider when language is related to cognitive learning and development.

And finally, the aspect of policy development seems to be a major concern that emerges from considering teaching at-risk students through the lens of cognitive instruction. Are there practices or policies that really need to be re-examined as supportive or destructive of at-risk students' development? What significance might grouping practices have on teaching at-risk students with a cognitive emphasis? What guidelines for maximizing resources, both human and physical, need to be developed? How important is it to pursue positive school and classroom environments that encourage collegial contact for both students and teachers? What role does the district office or the building principal play in giving the classroom teacher control over the major decisions of sound and thoughtful

instruction? The current thinking skills movement is no advocate for teacher-proof curricula or mandated learning programs untouched by the instructors' decision making. Many of the personnel policy issues addressed by the current approaches dealing with at-risk students are also addressed by the innovative thinking programs.

Ultimately, good teaching and high regard are the greatest potential bonus for the at-risk student, just as they are for the gifted or regular student. Care needs to be taken to know about the particular insufficiencies of the at-risk student, for he/she is only a novice at thinking and needs to be aided in gaining insight into his or her own better thought and performance. For too long, perhaps, educators have neglected encouraging the connections of student thought processes with the more complex structures of thinking. In the end, the greatest educational danger our society faces in not addressing the cognitive needs of this special population is that at-risk students will be ill-served by never knowing what they don't know. Further, they will have been bypassed by opportunities to acquire the higher level skills that can make them capable of transforming their own lives. Educational reform, at the current juncture of circumstances in American education, has given us a unique chance to deal effectively with the regular schooling of at-risk students in our population. What does this imply for the work that lies ahead?

IMPLICATIONS FOR THE FUTURE

If one accepts the notion that teaching thinking to at-risk students is a beneficial goal for both the students and American education, how would such an effort be pursued and what concerns need to be monitored? Many of the implications for the future are related to the issues previously discussed.

The Need for Teacher Advocates

Teaching thinking to at-risk students requires instructors who are positive and caring about youngsters, who, in fact, believe such students are both malleable and modifiable. At the same time, being teachers concerned with cognitive development calls for professional personnel who are knowledgeable in a number of ways. They will need to be familiar with thinking skills materials and cognizant of the literature and research on thinking and problem solving. They must be conversant, too, on the active instruction of, about, and for thinking and aware of ways to use each in instruction.

Teachers who seek to be effective in dealing with at-risk students need to work simultaneously on several dimensions of the classroom environment. Mediation and motivation are essential concerns, even before cognitive tasks are attacked in depth. Teachers need to view the "classroom as a social group for figuring out best answers," says Brown (1984, p. 18). The individual needs of at-risk students must be considered, as well as the characteristics of an entire class. Such instructors should want to collaborate with their peers in discussing best practices for teaching minority children and be open to including the children's family in some of the activities of learning.

Teacher advocates for helping at-risk students improve their thinking ability should be able to focus on meaningful connections that help explain to youngsters why certain relationships are logical and real. "Teaching becomes a delicate balance among content goals, strategies required for achieving those goals, and the experiences students bring to their learning," says Knoll (1987, p. vii) in introducing the concept of strategic teaching by Jones and her associates. At the same time, effective teachers must forge in their own minds the relationships between classroom activity and the content disciplines they teach, as well as understandings of the real world in which minority children live. The contexts of learning for at-risk children are complex and potentially unfamiliar to the college-educated instructor. Such contexts are certainly not easily captured in textbook depictions of urban education.

Finally, teacher advocates must be sensitive to the expression and language of relating to at-risk learners. Body language as well as oral speech; expectations, responses, and praise all enter into the intricate and diplomatic exchanges of value in a classroom. If alienation and boredom are the heritage of past experiences at teaching at-risk students, teachers must be ready to counter such foes both individually and collectively.

The Need for Long-Term Change

Teaching thinking to at-risk students is not a quick fix activity nor simply a recipe-based sequence of canned programming. Personalized knowledge and self-regulated monitoring grows slowly in learners and needs to be tied to real experiences and meaningful detail. Programs that emphasize continuous progress, built on a student's individual pace, have been most

successful with at-risk students and good thinking efforts should probably be no different (Slavin, 1987).

Starting cognitive education with young children seems to offer the possibility of having an impact that can be sustained. Obviously, dropout prevention stands a better chance of occurring if efforts begin in pre-school settings rather than in the middle grades or adolescent years. This does not preclude work in middle grades or during adolescence, for much research suggests these are still formative times for development. However, providing a variety of experiences in early years and changing work groups frequently, rather than locking youngsters into convenient, restrictive categories, ought to be regular practices for long-term student gain.

Teachers of cognitive instruction need to focus on ways to develop student autonomy over time, to help at-risk youngsters learn to take control of their own learning wherever that occurs. For students living in America's urban ghettos, it seems that transferring the realization of the importance of their own responsibility in learning is one of the most essential aspects of learning at all. It is the mark of maturity as an individual and the challenge to be a full-fledged member of a democratic society. Higher order skills must be made applicable on the city streets as well as in the classroom. At least in the classroom, they can be teacher-nurtured.

The Need for Better-Integrated Curriculum, K-12

A focus on thinking-based education for all students, including those at-risk of academic failure, highlights the need for integrating cognitive instruction into the regular curriculum of the school. The ideas of subject matter need to be interrelated with the student's skills and

processes in productive thinking, and the learner's strategies of metacognition and problem solving need to be allied to the methodologies of various school subjects. The students as well as the teachers need to be active in making these curricular connections.

Such an integration of cognition and curriculum ought not to be viewed as a response to a simplistic war between content and process. Contrary to some scholars' views of the cognitive approach to instruction (Cheyney, 1987), teaching thinking is not devoid of content nor necessarily removed from concerns of knowledge about subject matter. Nor is teaching thinking the provision of techniques for simply recalling important facts or unconnected trivia. Such views miss a great deal of what cognitive instruction is all about; in particular, such approaches miss what is the teacher's major challenge in working with at-risk learners. Teaching history or geometry or literature to students who live in an urban housing project requires the teacher to know the subject matter content as potential ideas for the classroom, but also requires the instructor to be mindful of how content can become meaningful to these particular students, within the context of real classroom dynamics, and relative to the chemistry of interaction among the students themselves.

Shulman (1986, 1987) emphasizes that of the various forms of knowledge which a teacher must address in promoting comprehension among students, pedagogical content knowledge -- knowing how to relate ideas of the academic subject matter to the teachable situation -- is the professional educator's unique domain. Being a successful teacher, which he likens to being a symphony conductor (Shulman, 1987, p. 2), means helping students see a content area develop thorough multiple levels of meaning (simple translation,

relationships, interpretation, application, and evaluation) until the ideas become their own. Shulman describes an ideal English teacher who strives to liberate her secondary students' minds through literacy. She wants them to use the contents of the literature curriculum at school ultimately to illuminate the students' lives. If she were working with at-risk youngsters, she would need to see that earlier levels of meaning are mastered first. She also needs to interest the students in the work initially, to challenge their involvement and intrinsic motivation in the learning itself.

Content areas of the school's program are only beginning to address the cognitive challenge for improved instruction. Reading and writing specialists have begun to consider the issues of thinking in developing programs and courses for student comprehension and understanding (Jones, Palincsar, Ogle & Carr, 1987; Harris & Cooper, 1985). Problem solving and creative involvement issues are being addressed by mathematicians, scientists, and instructors of various arts with student thinking in mind (Dillon & Sternberg, 1986). Some practitioners are concentrating their efforts on minority students' difficulties (Orr, 1987), but schools have a long way to go in making the ideal real. There are many classrooms where content is still taught as an accumulation of fact unrelated to ideas within the teaching discipline itself, let alone correlated to other areas of knowledge. There are many textbooks and instructional materials that serve the goal of coverage in a content area, but fail to be concerned with a student's developing awareness of a discipline, or the ways learners build up strategies for resolving problems in particular contexts. Successful thinking skills programs can be sources of information and example for

developing cognitive-based curricula. Classroom teachers, in particular, can benefit from knowledge of programs like Philosophy for Children, CoRT, and Instrumental Enrichment -- especially the implementation of these programs with minority youngsters.

The Need to Develop District and Building Support

For any innovation to take hold in an educational environment and certainly to continue and thrive in real classrooms and buildings, the leadership of the particular institutions involved need to be knowledgeable and supportive of the change. To succeed, teaching thinking to at-risk youngsters has to become a significant goal for district leadership and building principals. As the thrust of a major program effort, teaching thinking has to be integrated into the regular sequence of decision making regarding curriculum, instruction, and assessment in the given organization.

Three particular factors seem to influence the quality of support that a district might manifest for a thinking program initiative. Allocating time for teachers and district leaders to meet, plan, and discuss their program is essential. Regularly scheduled project time can be a vital ingredient of effective activity. Determining human and material resources is another significant aspect of program support. Quantity of funds need not dominate a project; but lack of funding shows it is not valued. And thirdly, coordinating staff development work with the need to develop a thinking skills effort can be a major boost to launching a cognitive instructional initiative. Given the understanding of how important the teaching staff's control of decision making is to program success, leadership needs to focus on enabling staff to take charge of the project, not directing them on the administration's preferences for project management.

Reform by remote control, says Cuban (1987) doesn't work at state levels nor within large districts.

For a thinking-oriented project to be successfully launched for long-term change, the community surrounding the school, and especially the families of the students themselves, need to be aware and supportive of the cognitive approach. Thinking and intellectual development need to be valued in the larger community, and tie-ins to employment possibilities and community agencies are important adjuncts for a program that seeks to influence the lives of at-risk students. Bridging the gaps between the world of urban students and that of more advantaged learners is a necessity for paving the way for higher education or advanced training. Several efforts to make these connections are underway in large districts (Montague, 1987; Mezzacappa, 1987c). They merit watching for future outcomes.

The Need to Examine Current Policies and Practices

Finally, launching a thinking skills project for at-risk students may require a district or a school to re-examine their prior policies and practices in light of the goals of cognitive instruction. Grouping and tracking policies, promotion standards, testing and assessment practices, curriculum planning and development, and teacher evaluation might all be addressed differently if teaching students to think critically and to be independent learners are the major desired outcomes of a program. These policies and practices need to be debated and deliberated by the professional staff who will conduct the project. Such debate and deliberation are extensive learning mechanisms. In the long run, it is hoped discussion about such issues will educate a staff on the deeper meaning of cognitive instruction for their school community.

In Conclusion

This study has examined two rather large literatures, at-risk students and cognitive instruction or teaching thinking, and considered whether their interrelationship seems to be a wise and productive initiative for the future of American education. That there are obvious relationships and hopeful areas of collaboration seems well documented in the study. Perhaps even more than other students in our schools, at-risk learners need to be able to figure things out and to be independent learners. That is an important aspect of equity in American schooling.

But this examination also shows that learning to think autonomously requires practice and gradual progress in a number of cognitive and meta-cognitive ways. The influence of the teacher is key to the learning, and teachers of thinking need to be knowledgeable about their subject matter, their students and their abilities, and the teachable situations around which schooling is organized. This has significant implications for both teacher education and continuous staff development. Moreover, cognitive learning rests a great deal on both the motivation of the student and that of the teacher -- we are all "proximal" and derive meaning from that which is closest to us. Cognitive learning needs to be "anchored" in instruction, as Bransford and his associates (1987) suggest, parallel to personal interests and contexts.

There are many questions raised by the association of teaching thinking and at-risk students and some of them obviously need further research to answer. How exactly do at-risk youngsters learn? What influence do new thinking skills instructional materials have on student achievement after several years of implementation? How can content domains best be integrated

with thinking strategies for at-risk students to appreciate them? These research areas need to be pursued, even while cognitive instruction is begun in the classroom.

At least, this topic gives educational reform much food for thought about the burgeoning at-risk population filling America's classrooms. We cannot simply tell them what's to be done. They need to understand it in terms of the serious nature of the intellectual crisis in which they live. A vignette from a north Philadelphia neighborhood serves to illustrate this point. The Mayor's Anti-Graffiti Network recently painted a wall of a city housing project in collaboration with the local community. "Say No To Drugs," says the wall mural, "And Our Children Will Be Saved." The youngsters of that project need to realize that the directive about drugs is a critical thinking and decision making challenge, not a mere command. The marketing of illegal drugs puts every person in that neighborhood at-risk of survival, and only by realizing what an individual can do to fight the helplessness of such victimization in their community can hope for overcoming such situations emerge. Thinking for every child in American society may be the first step of retrieving the birthright of a democratic republic. In that north Philadelphia neighborhood, saying no to drugs as a conscious, self-monitoring, and autonomous act can return the metaphor to its religious roots. It is the children of America who will be saved -- Sybil and Pygmalion not withstanding.

BIBLIOGRAPHY

Anrig, G. R. (1985). Educational standards, testing, and equity. Phi Delta Kappan, 66(9), 623-626.

Ansara, A., Geshwind, N., Galaburda, A., Albert, M., & Gartrell, N. (Eds.). (1981). Sex differences in dyslexia. Towson, MD: Orton Dyslexia Society.

Ascher, C. (1986). Cooperative learning in the urban classroom. ERIC/CUE Digest, 30, 1-4.

Ascher, C. (1987). The ninth grade - A precarious time for the potential dropout. ERIC/CUE Digest, 34, 1-4.

Banks, J. A. (1982). Educating minority youths: An inventory of current theory. Education and Urban Society, 15(1), 88-103.

Belmont, J. M., Butterfield, E. C., & Ferretti, R. P. (1982). To secure transfer of training: Instruct self-management skills. In D. K. Detterman & R. J. Sternberg (Eds.), How and how much can intelligence be increased, 147-154. Norwood, NJ: Ablex.

Bereiter, C. & Englemann, S. (1966). Teaching disadvantaged children in the preschool. Englewood Cliffs, NJ: Prentice Hall.

Berrueta-Clement, J. R., Schweinhart, L. J., Barnett, W. S., Epstein, A. S., & Weikart, D. P. (1984). Changed lives: The effects of the Perry Preschool Program on youths through age 19. Ypsilanti, MI: The High/Scope Press.

Beyer, B. K. (1984). Improving thinking skills - defining the problem. Phi Delta Kappan, 65(7), 486-490.

Beyer, B. K. (1987). Practical strategies for the teaching of thinking. Boston: Allyn & Bacon.

Bloom, B., Davis, A., & Hess, R. (1965). Compensatory education for cultural deprivation. New York: Holt, Rinehart & Winston.

de Bono, E. (1967). New think: The use of lateral thinking in the generation of new ideas. New York: Basic Books.

de Bono, E. (1985). The CoRT thinking program. In A. L. Costa (Ed.), Developing minds: A resource book for teaching thinking (pp. 203-209). Alexandria, VA: Association for Supervision and Curriculum Development.

Boyer, E. L. (1987). Early schooling and the nation's future. Educational Leadership, 44(6), 4-6.

Boykin, A. W. (1986). The triple quandary and the schooling of Afro-American children. In U. Neisser (Ed.), The school achievement of minority children: New perspectives (pp. 57-92). Hillsdale, NJ: Lawrence Erlbaum.

Brandt, R. S. (1986). On improving achievement of minority children: A conversation with James Comer. Educational Leadership, 43(5), 13-17.

Bransford, J. D., Burns, M. S., Delclos, V. R., & Vye, N. J. (1986). Teaching thinking: Evaluating evaluations and broadening the data base. Educational Leadership, 44(2), 68-70.

Bransford, J. D., Sherwood, R. D., Hasselbring, T. S., Kinzer, C. K., & Williams, S. M. (in press). Anchored instruction: Why we need it and how technology can help. Nashville, TN: Vanderbilt University, George Peabody College for Teachers. (photocopy)

Bridgman, A. (1982, September 11). Head Start's benefits are short-lived, a three-year federal study concludes. Education Week, 5(2), 1, 15.

Brophy, J. (1986). Teacher influences on student achievement. American Psychologist, 41(10), 1069-1077.

Brophy, J. (1987). Research linking teacher behavior to student achievement: Potential implications for instruction of Chapter I students. East Lansing, MI: Institute for Research on Teaching. (photocopy)

Brophy, J., & Good, T. L. (1984). Teacher behavior and student achievement (Occasional Paper No. 73). East Lansing, MI: Institute for Research on Teaching.

Brown, A. L. (1984, November). Teaching students to think as they read: Implications for curriculum reform. Paper presented for the American Educational Research Association Project: Research Contributions for Educational Improvement. Washington, DC: American Educational Research Association.

Brown, A. L., & Campione, J. C. (1986). Psychological theory and the study of learning disabilities. American Psychologist, 14(10), 1059-1068.

Brown, A. L., Palincsar, A. S., & Purcell, L. (1986). Poor readers: Teach, don't label. In U. Neisser (Ed.), The school achievement of minority children: New perspectives (pp. 105-143). Hillsdale, NJ: Lawrence Erlbaum Associates.

Brown, S. I., & Walter, M. I. (1983). The art of problem posing. Hillsdale, NJ: Lawrence Erlbaum Associates.

Bruner, J. S. (1960). The process of education. New York: Vintage Books.

Calfee, R. C. (1987). Those who can explain, teach... Educational Policy, 1(1), 9-27.

Cardenas, J. A. (1986). The role of native-language instruction in bilingual education. Phi Delta Kappan, 67(5), 359-363.

Cheyney, L. V. (1987). American memory: A report on the humanities in the nation's public schools. Washington, DC: National Endowment for the Humanities.

Children's Defense Fund. (1987). A children's defense budget, FY 1988: An analysis of our nation's investment in children. Washington, DC: Author.

Chipman, S. F., & Segal, J. W. (1985). Higher cognitive goals for education: An introduction. In S. F. Chipman, J. W. Segal, & R. Glaser (Eds.), Thinking and learning skills. Vol. 2: Research and open questions (pp. 1-18). Hillsdale, NJ: Lawrence Erlbaum Associates.

Church, G. J. (1985, July 8). Hispanics: A melding of cultures. Time, pp. 34-39.

Cohen, E. G., & De Avila, E. (1983, December). Learning to think in math and science: Improving local education for minority children (Final Report to the Walter S. Johnson Foundation). Stanford, CA: Stanford University, School of Education.

Coleman, J. S. (1966). Equality of educational opportunity. Washington, DC: U.S. Government Printing Office.

Comer, J. P. (1987). New Haven's school-community connection. Educational Leadership, 44(6), 13-16.

Comer, J. P., Schraft, C. M., & Sparrow, S. S. (1980). A social studies curriculum for inner city children: Final report. New Haven, CT: Yale Child Study Center.

Committee for Economic Development. (1987, September). Children in need: Investment strategies for the educationally disadvantaged. Washington, DC: Author.

Cooper, K. J. (1987, July 11). Hispanic population grows 30% in 7 years. Philadelphia Inquirer, p. 12C.

Copple, C., Sigel, I. E., & Saunders, R. (1984). Educating the young thinker: Classroom strategies for cognitive growth. Hillsdale, NJ: Lawrence Erlbaum Associates.

Costa, A. L. (1984). Mediating the metacognitive. Educational Leadership, 42(3), 57-67.

Costa, A. L. (Ed.). (1985). Developing minds: A resource book for teaching thinking. Alexandria, VA: Association for Supervision and Curriculum Development.

Council for Economic Development. (1987). Children in need: Strategies for the educationally disadvantaged. New York: Author.

Crawford, J. (1987, March 25). Bilingual education works, study finds. Education Week, 6(26), 16.

Cuban, L. (1987, February). Schooling the at-risk child: Lessons for policymakers and practitioners. Paper presented at the North Central Regional Educational Laboratory Conference, Chicago, IL. (photocopy)

Cummins, J. (1986). Empowering minority students: A framework for intervention. Harvard Educational Review, 56(1), 18-36.

De Avila, E., & Duncan, S. (1985). The language-minority child: A psychological, linguistic, and social analysis. In J. W. Segal, S. F. Chipman, & R. Glaser (Eds.), Thinking and learning skills, Vol. 2: Research and open questions (pp. 245-274). Hillsdale, NJ: Lawrence Erlbaum Associates.

Deutsch, M. (Ed.). (1967). The disadvantaged child. New York: Basic Books.

Deutsch, M. (1986). Book review of R. E. Slavin et al (Eds.)., Learning to cooperate, cooperating to learn. Teachers College Record, 87(4), 630-633.

Dewey, J. (1910). How we think. New York: D. C. Heath.

Dillon, R. F., & Sternberg, F. J. (1986). Cognition and instruction. Orlando, FL: Academic Press.

Disraeli, B. (1926). Sybil: or the two nations. London: Oxford University Press.

Durán, R. P. (1983). Hispanics' education and background: Predictors of college achievement. New York: College Entrance Examination Board.

Durán, R. P. (1985). Influences of language skills on bilinguals' problem solving. In S. F. Chipman, J. W. Segal, & R. Glaser (Eds.), Thinking and learning skills. Vol. 2: Research and open questions (pp. 187-208). Hillsdale, NJ: Lawrence Erlbaum Associates.

Edmonds, R. (1986). Characteristics of effective schools. In U. Neisser (Ed.), The school achievement of minority children: New perspectives (pp. 93-104). Hillsdale, NJ: Lawrence Erlbaum Associates.

Educational Leadership. (1982, December). Special issue (vol. 40, no. 3) on More Effective Schools.

Educational Researcher. (1983, April). Special issue (vol. 12, no. 1) on Effective Schools edited by W. Bickel.

Edwards, J., & Baldauf, R. B., Jr. (1987, January). A detailed analysis of CoRT-1 in classroom practice. A paper presented at the third International Conference on Thinking, Honolulu, HI. (photocopy)

Eisner, E. W. (1987). The celebration of thinking. Educational Horizons, 66(1), 24-29.

Elkind, D. (1976). Child development and education: A Piagetian perspective. New York: Oxford University Press.

Engs, R. F. (1987). Historical perspective on the problem of black literacy. Educational Horizons, 66(1), 13-17.

Ennis, R. H. (1985). A logical basis for measuring critical thinking skills. Educational Leadership, 43(2), 44-48.

Feuerstein, R. (1979). The dynamic assessment of retarded performers: The learning potential assessment device, theory, instruments, and techniques. Glenview, IL: Scott, Foresman.

Feuerstein, R. (1981). Mediated learning experiences in the acquisition of kinesics. In B. L. Hoffer & R. N. St. Clair (Eds.), Developmental kinesics: The emerging paradigm (pp. 91-106). Baltimore: University Park Press.

Feuerstein, F., Jensen, M. R., Hoffman, M. B., & Rand, Y. (1985). Instrumental enrichment, an intervention program for structural cognitive modifiability: Theory and practice. In J. W. Segal, S. F. Chipman, & R. Glaser (Eds.), Thinking and learning skills, Vol. 1: Relating instruction to research (pp. 43-82). Hillsdale, NJ: Lawrence Erlbaum Associates.

Fine, M. (1986). Why urban adolescents drop into and out of public high school. Teachers College Record, 87(3), 393-409.

Frederiksen, N. (1984). Implications of cognitive theory for instruction in problem solving. Review of Educational Research, 54(3), 363-407.

Gannon, K. E., & Ginsburg, H. P. (1985). Children's learning difficulties in mathematics. Education and Urban Society, 17(4), 405-416.

Garber, H., & Heber, R. (1982). Modification of predicted cognitive development in high-risk children through early intervention. In D. K. Detterman & R. J. Sternberg (Eds.), How and how much can intelligence be increased (pp. 121-137). Norwood, NJ: Ablex.

Gay, G. (1975). Cultural differences important in education of black children. Momentum, 6(3), 30-33.

Gersten, R., & Keating, T. (1987). Long-term benefits from direct instruction. Educational Leadership, 44(6), 28-31.

Gilbert, S. E., II, & Gay, G. (1985). Improving the success in school of poor black children. Phi Delta Kappan, 67(2), 133-137.

Ginsburg, H. P. (1972). The myth of the deprived child: Poor children's intellect and education. Englewood Cliffs, NJ: Prentice-Hall.

Ginsburg, H. P. (1986). The myth of the deprived child: New thoughts on poor children. In U. Neisser (Ed.), The school achievement of minority children: New perspectives (pp. 169-189). Hillsdale, NJ: Lawrence Erlbaum Associates.

Glaser, R. (1984). Education and thinking: The role of knowledge. American Psychologist, 39(2), 93-104.

Gold, D. L. (1987, September 23). English-immersion students perform well in study. Education Week, 7(3), 5.

Good, T. L. (1987). Two decades of research on teacher expectations: Findings and future directions. Journal of Teacher Education, 38(4), 32-47.

Hakuta, K. (1986) Mirror of language: The debate on bilingualism. New York: Basic Books.

Hakuta, K., & Diaz, R. M. (1985). The relationship between degree of bilingualism and cognitive ability: A critical discussion and some new longitudinal data. In K. E. Nelson (Ed.), Children's language (vol. 5). Hillsdale, NJ: Lawrence Erlbaum Associates.

Hakuta, K., & Gould, L. (1987). Synthesis of research on bilingual education. Educational Leadership, 44(6), 38-45.

Hamilton, S. F. (1986). Raising standards and reducing dropout rates. Teachers College Record, 87(3), 410-429.

Hammack, F. M. (1986). Large school systems' dropout reports: An analysis of definitions, procedures, and findings. Teachers College Record, 87(3), 324-341.

Harris, T. L., & Cooper, E. J. (Eds.). (1985). Reading, thinking, and concept development: Strategies for the classroom. New York: College Entrance Examination Board.

Haywood, C. (1986). Teachers as mediators. Human Intelligence International Newsletter, 7(1), 3.

Herrnstein, R. J., Nickerson, R. S., de Sanchez, M., & Swets, J. A. (1986). Teaching thinking skills. American Psychologist, 41(11), 1279-1289.

Hispanics face growing isolation in schools, researchers says. (1987). Report on Education Research, 19(17), 7-8.

Hochman, G. (1987, July 12). Overcoming dyslexia. Philadelphia Inquirer Magazine, 12-17, 25-26, 28, 35.

Hodgkinson, H. L. (1985). All one system: Demographics of education, kindergarten through graduate school. Washington, DC: Institute for Educational Leadership.

Jensen, A. R. (1969). How much can we boost IQ and scholastic achievement? Harvard Educational Review, 39(1), 1-123.

Jensen, A. R. (1981). Obstacles, problems, and pitfalls in differential psychology. In S. Scarr (Ed.), Race, social class, and individual differences in I.Q. Hillsdale, NJ: Lawrence Erlbaum Associates.

Jensen, A. R. (1985). Compensatory education and the theory of intelligence. Phi Delta Kappan, 66(8), 554-558.

Jensen, A. R. (1986). g: Artifact or reality? Journal of Vocational Behavior, 29(3), 301-331.

Johnson, D. W. (1981). Student-student interaction: The neglected variable in education. Educational Researcher, 10(1), 5-10.

Jones, B. F. (1986). Quality and equality through cognitive instruction. Educational Leadership, 43(7), 5-11.

Jones, B. F., & Friedman, L. B. (1987). Active instruction for students at risk: Remarks on merging process-outcome and cognitive perspectives. Elmhurst, IL: North Central Regional Educational Laboratory. (photocopy)

Jones, B. F., Palincsar, A. S., Ogle, D. S., & Carr, E. G. (Eds). (1987). Strategic teaching and learning. Alexandria, VA: Association for Supervision and Curriculum Development.

Juel, C., Griffith, P. L., & Gough, P. B. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. Journal of Educational Psychology, 78(4), 243-255.

Kamii, C. (1984). Autonomy: The aim of education envisioned by Piaget. Phi Delta Kappan, 65(6), 410-415.

Knoll, M. K. (1987). Foreword. In B. F. Jones, A. S. Palincsar, D. S., Ogle, & E. G. Carr (Eds.), Strategic teaching and learning: Cognitive instruction in the content areas (pp. vii-viii). Alexandria VA: Association for Supervision and Curriculum Development.

Kuhn, D. (1986). Education for thinking. Teacher College Record, 87(4), 495-512.

Labov, W. (1972). Language in the inner city. Philadelphia: University of Pennsylvania Press.

Laosa, L. M. (1977a). Inequity in the classroom: Observational research on teacher-student interactions. Aztlán International Journal of Chicano Studies Research, 8, 51-67.

Laosa, L. M. (1977b). Socialization, education, and continuity: The importance of sociocultural context. Young Children, 32(5), 21-27.

Laosa, L. M. (1984). Ethnic, socioeconimic, and home language influences upon early performance on measures of ability. Journal of Educational Psychology, 76(6), 1178-1198.

Levin, H. M. (1986). Educational reform for disadvantaged students: An emerging crisis. Washington, DC: National Education Association.

Levin, H. M. (1987). Accelerated schools for disadvantaged students. Educational Leadership, 44(6), 19-21.

Levine, D. U., Holdsworth, S., & Aquila, F. D. (1987). Achievement gains in self-contained Chapter 1 classes in Kansas City. Educational Leadership, 44(6), 22-23.

Link, F. R. (1985). Instrumental enrichment: A strategy for cognitive and academic improvement. In F. R. Link (Ed.), Essays on the intellect (pp. 89-106). Alexandria, VA: Association for Supervision and Curriculum Development.

Lipman, M., Sharp, A. M., & Oscanyan, F. S. (1980). Philosophy in the classroom. Philadelphia: Temple University Press.

Lipson, M. Y., & Wixson, K. K. (1986). Reading disability research: An interactionist perspective. Review of Educational Research, 56(1), 111-136.

McDill, E. L., Natriello, G., & Pallas, A. M. (1986). A population at risk: Potential consequences of tougher school standards for student dropouts. American Journal of Education, 94(2), 135-181.

Mann, D. (1986). Can we help dropouts: Thinking about the undoable. Teachers College Record, 87(3), 307-323.

Martin, J. F., & Weinstein, M. L. (1984). Thinking skills and philosophy for children: The Bethlehem Program, 1982-1983. Bethlehem, PA: Bethlehem Area School District. (photocopy)

Marzano, R. J., & Hutchins, C. L. (1985). Thinking skills: A conceptual framework. Aurora, CO and Kansas City, MO: Mid-Continent Regional Educational Laboratory.

Marzano, R. J., Brandt, R., Hughes, C., Jones, B. F., Presseisen, B. Z., Rankin, S., & Suhor, C. (in press). Dimensions of thinking: A framework for curriculum and instruction. Alexandria, VA: Association for Supervision and Curriculum Development.

Myers, C. (1986). Teaching students to think critically. San Francisco: Jossey Bass.

Mezzacappa, D. (1987a, July 5). City dropout study paints grim picture. Philadelphia Inquirer, 1A, 6A.

Mezzacappa, D. (1987b, October 6). Learning in two languages: Advantage or hindrance. Philadelphia Inquirer, 20-21 HC.

Mezzacappa, D. (1987c, November 1). Gift of schooling may be hard to accept. Philadelphia Inquirer, 1-B, 6-B.

Miller, J. A. (1987). Rights panel study says desegregation has been effective. Education Week, 6(35), 1, 18.

Montague, B. (1987, September 30). Chicago business heads take hands-on approach to reform. Education Week, 7(4), 1, 19.

National Assessment of Educational Progress. (1987). National effort needed to raise the quality of literacy in America. ETS Developments, 33(1), 2.

National Coalition of Advocates for Students. (1985). Barriers to excellence: Our children at risk. Boston: Author.

National Commission on Excellence in Education. (1983). A nation at risk: The imperative for educational reform. Washington, DC: U.S. Government Printing Office.

National Commission on Secondary Education for Hispancis. (1984). Making something happen: Hispanics and urban high school reform (volumes I and II). Washington, DC: Hispanic Policy Development Project.

Neisser, U. (Ed.). (1986). The school achievement of minority children: New perspectives. Hillsdale, NJ: Lawrence Erlbaum Associates.

New York Times. (1987, January 13). Dyslexia's cause is reportedly found. New York Times, C1.

Nickerson, R. S. (1984). Kinds of thinking taught in current programs. Educational Leadership, 42(1), 26-36.

Nickerson, R. S. (1986a). Project Intelligence: An account and some reflections. in M. Schwebel & C. A. Maher (Eds.), Facilitating cognitive development: International perspectives, programs, and practices. New York: Haworth Press.

Nickerson, R. S. (1986b). Reasoning. In R. F. Dillon & R. J. Sternberg (Eds.), Cognition and instruction (pp. 343-373). Orlando, FL: Academic Press.

Ogbu, J. U. (1978). Minority education and caste. New York: Academic Press.

Ogbu, J. U. (1986). The consequences of the American caste system. In U. Neisser (Ed.), The school achievement of minority children: New perspectives (pp. 19-56). Hillsdale, NJ: Lawrence Erlbaum Associates.

Olson, L. (1987, June 10). Coalition of educators urges wider efforts for "at-risk" youths. Education Week, 6(37), 1, 12.

Orr, E. W. (1987). Twice as less: Black English and the performance of black students in mathematics and science. New York: W. W. Norton.

Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension monitoring activities. Cognition and Instruction, 1(2), 117-175.

Perfetti, C. A. (1984). Reading acquisition and beyond: Decoding includes cognition. American Journal of Education, 93(1), 40-60.

Philosophy for children: Where are we now... (1986). Upper Montclair, NJ: Institute for the Advancement of Philosophy for Children.

Pifer, A. (1979). Bilingual education and the Hispanic challenge. 1979 Annual report. New York: Carnegie Corporation.

Pittman, R. B. (1986). The importance of personal, social factors as potential means for reducing high school dropout rate. The High School Journal, 70(1), 7-13.

Presseisen, B. Z. (1985). Unlearned lessons: Current and past reforms for school improvement. Philadelphia and London: Falmer Press, Taylor and Francis Group.

Presseisen, B. Z. (1986). Critical thinking and thinking skills: State of the art definitions and practice in public schools. Philadelphia: Research for Better Schools.

Presseisen, B. Z. (1987). Thinking skills throughout the curriculum: A conceptual design. Bloomington, IN: Pi Lambda Theta.

Resnick. L. B. (1985). Education and learning to think. Pittsburgh: University of Pittsburgh, Learning Research and Development Center. (photocopy)

Rosenthal, R., & Jacobson, L. (1968). Pygmalion in the classroom: Teacher expectation and pupils' intellectual development. New York: Holt, Rinehart & Winston.

Rumberger, R. W. (1987). High school dropouts: A review of issues and evidence. Review of Educational Research, 57(2), 101-121.

Russell, R. L., & Ginsburg, H. P. (1984). Cognitive analysis of children's mathematics difficulties. Cognition and Instruction, 1(2), 217-244.

Samway, K. D., & Alvarez, L. P. (1987). Integrating language arts instruction for language minority students. Educational Horizons, 66(1), 20-23.

Savell, J. M., Twohig, P. T., & Rachford, D. L. (1986). Empirical status of Feuerstein's 'Instrumental Enrichment' (FIE) technique as a method of teaching thinking skills. Review of Educational Research, 56(4), 381-409.

Schweinhart, L. J., & Weikart, D. P. (1985). Evidence that good early childhood programs work. Phi Delta Kappan, 66(8), 545-553.

Scott-Jones, D., & Clark, M. L. (1986). The school experiences of black girls: The interaction of gender, race, and socioeconimic status. Phi Delta Kappan, 67(7), 520-526.

Sewell, T. E. (1987). Dynamic assessment as a nondiscriminatory procedure. In C. S. Lidz (Ed.), Dynamic assessment. New York: Guilford Publications.

Shaw, B. (1951). Pygmalion: A romance in five acts. Baltimore: Penguin Books.

Shipman, V. C. (1982). Evaluation of the Philosophy for Children Program in Bethelehem, Pennsylvania. Thinking, 4(1), 37-40.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. Educational Researcher, 15(2), 4-14.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. Harvard Educational Review, 57(1), 1-22.

Sizer, T. (1984). Horace's compromise: The dilemma of the American high school. Boston: Houghton Mifflin.

Slavin, R. E. (1980). Cooperative learning. Review of Educational Research, 50(2), 315-342.

Slavin, R. E. (1981). Synthesis of research on cooperative learning. Educational Leadership, 38(8), 655-660.

Slavin, R. E. (1987). Making Chapter 1 make a difference. Phi Delta Kappan, 69(2), 110-119.

Slavin, R. E., Karweit, N. L., & Madden, N. A. (1987, February). Success for all: A proposal for elementary school reform. Baltimore: Johns Hopkins University, Center for Research on Elementary and Middle Schools. (photocopy)

Sleeter, C. E., & Grant, C. A. (1986). Success for all students. Phi Delta Kappan, 68(4), 297-299.

Stallings, J. (1981). Effective strategies for teaching basic skills. In D. G. Wallace (Ed.), Developing basic skills programs in secondary schools (pp. 1-19). Washington, DC: Association for Supervision and Curriculum Development.

Stern, M. J. (1987). The welfare of families. Educational Leadership, 44(6), 82-87.

Sternberg, R. J. (1981). Intelligence as thinking and learning skills. Educational Leadership, 39(1), 18-20.

Sternberg, R. J. (1983). Criteria for intellectual skills training. Educational Researcher, 12(2), 6-12, 26.

Sternberg, R. J. (1984). How can we teach intelligence? Educational Leadership, 42(1), 38-48.

Sternberg, R. J. (1985a). Choosing the right program. In A. L. Costa (Ed.), Developing minds: A resource book for teaching thinking (pp. 185-186). Alexandria, VA: Association for Supervision and Curriculum Development.

Sternberg, R. J. (1985b). Critical thinking: Its nature, measurement, and improvement. In F. R. Link (Ed.), Essays on the intellect (pp. 45-65). Alexandria, VA: Association for Supervision and Curriculum Development.

Sternberg, R. J. (1986). Cognition and instruction: Why the marriage sometimes ends in divorce. In R. F. Dillon & R. J. Sternberg (Eds.), Cognition and instruction (pp. 375-382). Orlando, FL: Academic Press.

Sternberg, R. J. (1987). Teaching critical thinking: Eight easy ways to fail. Phi Delta Kappan, 68(6), 456-459.

Sternberg, R. J., & Bhana, K. (1986). Synthesis of research on the effectiveness of intellectual skills programs: Snake-oil remedies or miracle cures? Educational Leadership, 44(2), 60-67.

Strother, D. B. (1986). Dropping out. Phi Delta Kappan, 68(4), 325-328.

Task Force on Education for Economic Growth. (1983). Action for excellence: a comprehensive plan to improve our nation's schools. Denver: Education Commission of the States.

Toch, T. (1984). The dark side of the excellence movement. Phi Delta Kappan, 66(3), 173-176.

Vygotsky, L. S. (1962). Thought and language (E. Hanfmann & G. Vakar Eds. and translators). Cambridge, MA: MIT Press.

Wassermann, S. (1987). Teaching for thinking: Louis E. Raths revisited. Phi Delta Kappan, 68(6), 460-466.

Wehlage, G. G., & Rutter, R. A. (1986). Evaluation of a model program for at-risk high school students. Paper presented at annual meeting of the American Educational Research Association, San Francisco.

Wehlage, G. G., Rutter, R. A., & Turnbaugh, A. (1987). A program model for at-risk high school students. Educational Leadership, 44(6), 70-73.

Whimbey, A., & Whimbey, L. S. (1975). Intelligence can be taught. New York: E. P. Dutton.

Willis, H. D. (1986, October). Students at risk: A review of conditions, circumstances, indicators, and educational implications. Elmhurst, IL: North Central Regional Educational Laboratory.

Wilson, W. J. (1987). The truly disadvantaged: The inner-city, the underclass, and public policy. Chicago: University of Chicago Press.

Worsham, A. M., & Stockton, A. J. (1985). A model for teaching thinking skills: the inclusion process. Bloomington, IN: Phi Delta Kappa Educational Foundation.

Yankelovich, Skelly and White, Inc. (1984). Spanish USA 1984. New York: Author.

Zinner, J. (1985). Thinking makes an impact. Thrust for Educational Leadership, 14(7), 30-32.